

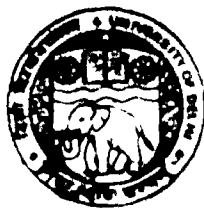
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SCIENCE AND THE SPIRIT OF MAN

SCIENCE
AND THE
SPIRIT OF MAN

A NEW ORDERING OF EXPERIENCE

by

JULIUS W. FRIEND

and

JAMES FEIBLEMAN

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PREFACE

From a consideration of many contemporary problems, seemingly unrelated to philosophy, this book came to be written. As these problems were discussed by us over the lunch table for many years, we were gradually led to the conclusion that they are all actually related to philosophy, because they all took root in a certain set of beliefs, the essence of which is a belief in and an obsession with the factual and proximate aspects of life, and a corresponding disinterest and disbelief in remoter ends and intangible ideals. In other words, there is everywhere evident the tendency to belittle man and all human values.

Our ideas were further crystallized by a study of modern physics, with the growing conviction that the proper interpretation of physical concepts would upset the basis of the prevailing positivism. At this stage, a reading of *Science and the Modern World*, by A. N. Whitehead, with particular reference to Whitehead's interpretation of physics, reinforced our belief by showing at least one interpretation not unconnected with the rest of human experience.

We decided that it is possible to exhibit entire man with all his affects and faculties as at once containing and being something more than the various abstractive aspects put forward by the many sciences, in contrast to the notion that entire man could be included in and accounted for by an assemblage of such abstractions. This explains why most of the book is an attack upon the position of certain abstractive conceptions which pose as concrete.

This book is ambitiously subtitled "A New Ordering of Experience." Some explanation and apology are due. We surely do not presume to submit blue-prints for the construction of a whole new world-order, what we do offer is merely a rough large-scale map, traced in the crudest outlines, here and there no doubt out of proper proportion. There have

been presented many beautifully detailed descriptions of experience from various abstracted aspects; but what seems to us to be peculiarly lacking is the general outline of the whole of experience. We find ourselves, in short, "infected with an eager generality" amid a scene where emphasis has been laid on the perfection of details. Thus this book is weak in the very respect for which it was primarily written: it champions the most concrete; it is, alas, most abstract. We deal in this work with concreteness, an abstract affair, rather than with the concrete. But this is unavoidable in the drawing of a large-scale map of experience. It has seemed of more value to indicate sketchily how man may be presented as entire man, rather than to elaborate on the concrete itself. There are many more capable than we of filling in and correcting our outline, the task required is that of presenting an integral synthesis. If our book aids the accomplishment of this task it has achieved its purpose.

The Introduction to this book originally appeared as "Barrage for a New World" in *The Menorah Journal* for July-September 1932.

NEW ORLEANS

August 25, 1932

INTRODUCTION

The last four centuries have seen the gradual and cumulative establishment of a world-order which has transformed not only the face of the earth but all human institutions, and even the actions and thoughts of men. Whether or not this be progress, it is certainly change. Impulses may not have perceptibly altered in historical time, yet the form, expression, and emphasis, which these impulses are given, do shift from age to age so completely that it seems to amount to a metamorphosis of man himself. The modern world has not been transformed by mere chance but by a reorientation of reason.

To illustrate what an astounding revolution the present orientation represents, we have only to compare it with its immediate predecessor. If a mediaeval man were to visit the world to-day, he would find it unrecognizable. Hardly a single one of his attitudes has survived: he would laugh at present-day certitudes, be aghast at its doubts, not comprehend its enthusiasm for certain ideals, its indifference to others. Most of all would he be appalled at the lack of a coherent ordering of beliefs, the failure to assign to human life a more significant position than that of the world of matter—with the resulting anarchy in thought and action. Since the vast accumulation of scientific data, in such unrelated fields as physics, biology, economics, psychology, etc., is not interpreted as indicating a unified direction or purpose, he might ask for what reason had all this knowledge been collected. Altogether, he would probably conclude that what now parades as progress is really a mad emphasis on an unimportant phase of life, and that the scene he had been called out to contemplate was in process of complete disintegration. Without assenting to the entire condemnation of such a judgment, we must all admit the overwhelming importance of his questions, doubts, and indignations. To-day, as never before, the world stands in crying need of a radical examination of its values.

The modern world has demanded "hard stubborn facts"; in this demand, natural science has been the arbiter, the inspiration, and the ideal. Remote as the concepts of science may be from the ken of the man in the street, the scientific attitude has yet moulded the form of his mind to a degree seldom recognized. He will grant short shrift to ideas not plainly verifiable; although he will put utter faith in whatever seems tangible and in "what works." Thus the contemporary order may well be termed a *scientific cosmology* the arrangement of all experience around "hard stubborn facts" as the verified core of reality, in a world of fluxing appearances. Man has put his faith not in a remote spiritual ideal but in whatever phases of experience can be observed to manifest consistency.

Just what are these seemingly incontestable facts? Briefly stated, they are that, first of all, nature is a blind world of matter and energy, indifferent to man's reason, then, that man himself is an infinitesimal mite, clinging to accidental life on a tiny planet in a system of planets, which revolves around an insignificant star, itself lost in a wilderness of other stars, the sum of which is but a drop of materiality in the bewildering extent of the void, and, finally, that the universe proceeds eon after eon, according to fixed laws which decree the disintegration of all matter into dispersed energy.

With these beliefs as a centre, other aspects of experience have had to be grouped, as best they could, around it. That such grouping unduly cramps some aspects, and lames others, while it elbows still other aspects out of the frame altogether, is not surprising. Observe how some of these aspects of experience fare! All life becomes an accident, arising in some unknown fashion from inert matter, and wholly explicable (though not yet explained) by the laws which govern inert matter. Life is said to be a fairly recent manifestation, as astronomical time is calculated, and living beings, starting from a common ancestor, assume their various forms through the operation of chance (variation and environment) and the inferred struggle of the organism to survive. Logically, there-

fore, the reason must be considered a chance instrument evolved for survival in the struggle for existence, and can have no more essential authority than the eye or the ear. Sex becomes equally a survival apparatus, wholly devoted to the reproduction, and hence the continuance, of the organism. Social institutions become compacts made on the assumption that, united into groups and regulated, organisms can better compete for survival. All forms of recreation become recuperation of the organism in order that it may again better compete for survival.

But other aspects of experience do not lend themselves so readily to such elastic treatment, and, as a consequence, are either excluded altogether or explained away. What, for instance, shall be said of love that surmounts and sometimes even denies sex, of sex that defeats procreation? What shall be said of art which fulfils no useful purpose, of laughter that mocks usefulness? How can the heroism that scorns survival be justified? What kind of a case can be made out for the thirst for knowledge for its own sake, the yearning search for meanings beyond the proximate? What shall be thought of the worship that feeds on an ineffable ecstasy, the peace that passes understanding? These are the major and most imperative aspects of experience, yet the scientific cosmology gives them scant notice. They are all dismissed as escapes from life, baseless fictions, having no existence in the world of reality, mere figments of the imagination. The scientific cosmology brushes them all aside in its efforts to determine the nature of reality.

When we turn to the field of action, it is shocking to observe the effect produced by the modern cosmology on contemporary life. Activity in such a cosmology must logically be confined to the business of keeping alive. So the modern man concerns himself with "practical activity," that is, proximate ends; and indeed great industry and intelligence are exhibited in their pursuits. With the question, however, of what ultimate end is being served, we come to a blind alley. Evidently the answer should be that the ultimate purpose of life is *merely* to keep

alive; but it is only too obvious that no one believes in such a silly purpose, or would wish to continue living if he did believe it. So the question goes unanswered, since there is no rational background with which to bolster up a faith in any better purpose. It is of no avail to console man by offering him a rational system secondary to reality; that is, to tell him that, regardless of the terrifying indifference of the universe, he can build the good life. He scorns to put his faith in an *appearance* of reality; reality must be, for purposes of faith, *aut Caesar aut nullus*.¹ That is why the modern man is continually being confronted both with a faith, which he cannot dispel, in the existence somewhere of some significant purpose to life, and with a rational background which gives no encouragement to such a faith, but rather denies its possibility. Faith denied its legitimacy must yet attach significance to something. Therefore the faith of the modern man attaches itself to material things as the only things allowed reality by the scientific cosmology. But matter, being merely matter, is unable to carry such an investiture of significance, and so man is driven back upon his own unsatisfied need of worship. This consigns him to a cynicism and a feeling of futility and boredom. Modern man continues to desire the possession of things, which, once possessed, are no longer desired, that is, reason sends him toward abstract possession, while his own feeling for what is humanly proper turns material things into a burden and a curse. Thus practical ends prove impractical ends from the point of view of human interests.

In a world-order not informed by a comprehensive purpose, ethics, always *à posteriori* and pragmatical, can have no definition. The determination of what is practical depends on the end to be served; what serves the proximate does not necessarily serve the final. Thus except in consideration of some final purpose, ethical judgments are hazy, every act that succeeds within its own limits is judged right, without regard to its other

¹ This is the flaw in such systems as humanism, liberalism, rational socialism, and all like attempts at patchwork amelioration.

relations. It is, again, what works, what "gets by," that carries the moral approval, albeit there is always a surreptitious realization that this should not be the case. Efficiency, narrowly defined, is the modern ethical touchstone.² The confusion has become so grave that to-day man is characterized by an indecision in moral judgment, so that he denies the proper existence of ethical criteria, and yet is himself guiltily unresolved, and indignant over certain actions of others.

The lack of any significant purpose embracing all activities, and the resulting concern with proximate ends, make, in the sphere of knowledge, for watertight compartments. This accounts for the extreme specialization found everywhere to-day, with an emphasis on the perfection of units which are not conceived as related to a single scheme, and for the fact that nothing more than the feeblest attempt is made to correlate them.

The scientific cosmology can be held responsible for so much in modern life, that a few examples will have to serve. Perhaps the most conspicuous institution is industrialism, which owes its commanding position to the obsession with means as though they were ends in themselves. Industrialism is a human tool which has lost its utile function and achieved an independent meaning. Its makers have come to worship it as an entity, and so have brought their allegiance to an abstraction from the world of matter. Humanity, which industrialism was to have served, has become its slave instead. It is not a far cry from a worship of matter to an evaluation in terms of quantities of matter to a megalomania, as manifested in pride in population, bigger office buildings, "bigger and better" stadia, larger corporations, super-dirigibles, larger ocean liners, *ad nauseam*.

In the arts, which have always been the images and symbols of religious significance, there is the usual effort to express what is currently worshipped. This is most forcibly exemplified in skyscraper architecture, for skyscrapers are really temples which have been erected in honour of the modern gods, built

² It is also the sole virtue of the machine

as though they were to reach a literal heaven. The realistic movement in literature arises from the belief that by setting down the greatest number of facts in a situation its significance will thereby be made to emerge. Again, we have the spectacle of units, separated and uncorrelated, as though the exact coldly observed detailed description of a man would give more of the appearance of that man than would one significant feature.

Of a like origin is the intense enthusiasm for education, on the assumption that a knowledge of facts by themselves constitutes wisdom. *Pari passu* with the rise of universal education has come about the degradation of culture, since culture is the acquiring of the ability to seize upon the significant in knowledge, that is, the ability to relate into a meaningful synthesis the largest number of seemingly random facts. Humanitarianism is one of the institutions for which the modern world has received great commendation in contrast to the mediaeval or the antique; certainly its merits are obvious enough, yet it is to be questioned whether there is more true humanity to-day than in past epochs. Humanitarianism caters not to the spirit, which is a fiction in the modern world, but to physical well-being, which is a tangible "fact."

The emphasis on factuality generally, the prosaic colourless attitude toward life, and indeed the whole shading and form of the modern mind are accounted for by the scientific cosmology, because the rational background of an era is the determinant factor for all its modalities.

— It becomes increasingly clear that man is not at home in his present world-order. He cannot whole-heartedly subscribe to its tenets; his faith is divorced from his reason, and the fact that his deepest impulses struggle against the reigning order of beliefs constitutes his unhappiness. But impulse is powerless to rebel without the bolstering arm of reason. The modern cosmology fails utterly to indicate any criterion by which life—human life—may be conducted. The essential human values are slighted, slurred, demoted. It is this very lack of an emphasis on essential human values which proves the desperate

necessity for a fresh evaluation of categories. An adequate new world-order would have to be built on and around human values as a nucleus; it would have to assume as a major premise that man is the centre of his world. Our problem is to determine whether such a cosmology can logically be constructed, or whether it is an idle dream, fit only for the so-called mind spinning of philosophy. But before we are free to undertake this task, we must face an important question. Are the basic presuppositions of the present scientific cosmology valid and proven? If so, the reigning order is not open to attack; and we must then either manfully accept it, or leave it and live in a fool's paradise.

If, on the other hand, as we believe, the scientific cosmology has been constructed on exceedingly dubious and unverified metaphysical principles, deduced from a misinterpretation of what science has discovered, then it is entirely open and vulnerable. If we can show that science, far from being an account of reality as opposed to the common appearance of things, is merely a convenient and abstract arrangement of certain relations apparent in common experience, and that as such it has no metaphysical priority over common experience but on the contrary is more remote from the significance of life, and therefore has a value only in so far as it serves common experience, we shall have done valuable service. removed the absurd halo from science, put human values back into their rightful place, and taken the curse off matter. This is what we hope to do. We must emphasize from the start that we are not undertaking a criticism of science *qua* science (which does not promulgate metaphysical theories), we are, however, attacking those metaphysical interpretations which are drawn from science. It is with metaphysical interpretations, and not at all with the subject-matter of science, that the world at large has concerned itself, and indeed even the scientists, being men as well as scientists, have had to give their work the endorsement of extra-scientific speculation. It would appear that metaphysics cannot be evaded.

It is generally supposed that science has discovered certain finally demonstrable facts, and has abandoned the necessity of basing its premises in faith. The supposition runs that, about four centuries ago, men suddenly came to their senses, and decided that all prior thought had been dictated by superstitious bigotry, and that, for the first time in the history of human thought, a true understanding of the world would be built on absolutely proven and clear-cut foundations, and that the ensuing structure of knowledge would therefore be equally proven, clear cut, and final. This is of course pure myth; and of those who were going to dispense with all faith, presents a pretty spectacle of the most naively faithful.

If science had waited for clear-cut and undeniable premises, there would have been no science. Science accepted, on faith alone, common-sense experience, and set out to examine it. The scientific structure has not been built, as is commonly believed, on an empirical examination of facts taken by themselves, which Bacon thought possible, but by a series of grand, inspired guesses called inductions. These inductions are, by their nature, beliefs, *à priori* questions and answers, explanations made before proof. It is true that every induction which has permanent importance has had to submit to empirical proof; yet it must for ever remain impossible, unequivocally and ultimately to prove the truth of any induction. All that can be ascertained is that an induction does or does not embrace the known phenomena. If so, it is adopted as true, at least provisionally. All theories of science are of this sort, useful concepts, like the force of gravity, now admittedly fictional, or like the quantum theory, which seems for the present day more of an evidential fact. Although a scientific theory may not for a time be disproved, it can never be finally proved. The quest for certainty may be the quest of science, but science can neither start with certainty, nor build with it, nor arrive at it. It starts with faith in common-sense experience, builds with fictional concepts, and continually submits its findings to experience in the hope of arriving at reasonable explanations to include

all known phenomena in ever more comprehensive syntheses.

How, then, has science, supposedly based on undeniable ultimate reality, become the modern faith? Man, always in search of certainty, ceased to find it in established religions, and therefore turned to science. Yet surely no scientist worthy of the name would elevate science to the status of a religion, or encourage the idea that science is in touch with ultimates? This notion has been adopted by the layman because of the "miracles" of applied science, i.e. technology, through those false prophets, the romantic popularizers of science, but principally because of the inexorable impulse to believe in something. It must be admitted that the gospel according to science has borne some good fruit. Certainly the marvellous advance of technology owes its success to the sort of passionate attachment that springs only from a blind acceptance of first principles. But this sole emphasis on faith in science has now reached its limitations; and this faith stands revealed as an influence which makes for confusion and evil, and which, unless corrected, may cause incalculable harm.

In order to exhibit the confusion implicit in the presuppositions of the modern cosmology, and to substitute for it our own hypothesis, we must begin with an examination of first principles, or metaphysics. Metaphysics is not for the tender minded; it is never pleasing for men to learn that what they have held indisputable is ultimately founded on faith. Nevertheless, neither the man in the street nor the scientist is able to dodge metaphysics, since all that is believed is somewhere grounded in some theory of reality. Science, for all its profound scorn of metaphysics, must choose either to ignore it, and to admit that its own findings are subject to no interpretation for experience; or to have recourse to metaphysics, either as such metaphysics is logically postulated by philosophy, or to interpret their own data as ultimate reality, which is simply illogical metaphysics. Philosophers themselves have unhappily too often fallen into this last quagmire, and so have become apologists of science, mere scientific logicians. The very

prevalent idea that science has entirely replaced philosophy is so wide of the mark that it would never have been held by otherwise intelligent men save for the stupendous prestige that science enjoys unsought. The unwarranted assumption of the scientific cosmology, that a world exists independent of man's perception, and that the mind of man exists as an independent entity, has logically assigned to the natural sciences the task of investigating the nature of this independent world, and assigned to psychology the task of investigating the nature of this independent mind. If this division be admitted as a premise, no task is left to philosophy. But the difficulty is that this premise begs the metaphysical question of whether either nature or mind can have such independence. To examine this question, it is necessary to return to philosophy. Philosophy yet remains not the handmaiden of science, but rather the queen of the sciences, ruling over the very ground on which not only the restricted edifices of science are erected, but all the mansions of cognition.

In Chapter I of this book we shall begin with a logical examination of the current metaphysics, in an attempt to show it confused, unfounded, and untenable. We shall set forth an alternate metaphysical position based entirely on human values. In Chapter II we shall exhibit how the present world-order arose historically, and demonstrate the historical necessity for a fresh world-order. In Chapter III an examination of modern physics will make evident that its concepts properly understood undermine the metaphysical presuppositions of the current world-order, and at the same time indicate the metaphysics for a new, and how a theory of value is allowable. Taking the psychological point of view, we shall examine, in Chapter IV, what conclusions may be drawn when current psychological knowledge is studied in the light of our own metaphysics. Finally, in Chapter V, we shall return to the positive side of our philosophy, and set forth whatever conclusions may be deduced from the body of our logical argument, as to the problem of value in its various forms.

SCIENCE AND THE SPIRIT OF MAN

CHAPTER I

METAPHYSICAL ARGUMENT

1 NO INDEPENDENT WORLD

The modern mind has been misled by metaphysical conclusions, drawn from the findings of science, to assume that science has definitely proven the existence of a world independent of and underlying perception. It assumes further that the laws of such a world are determinate for all creatures and things, and indifferent to the reason and aspirations of humanity, and that reason, though excluded from this independent world, is capable of comprehending and of discovering its absolute laws. These assumptions demand a fundamental dualism: an objective world, real, and a subjective world, fanciful. Although waves of sound and notes of music are both sense percepts, the former is vested with reality while the latter is assigned a secondary subjective existence. Nevertheless man, limited according to this theory to his own imaginative constructions, is supposed to be the arbiter of what is real and what is fanciful. By this theory qualities of sense objects are judged subjective when they vary from observer to observer, whereas certain other qualities invariant to all observers are said to be objective. These latter qualities, called primary, are then assumed to be independent and *given* as the causal data of experience. Succinctly stated, this is the theory of reality which is basic in the modern mind.¹

¹ The fact that the line dividing objective and subjective qualities has been drawn differently by common experience, classical physics, and the new physics, does not concern the argument here. Common experience generally attributes objective reality to the perceptual world, but deems subjective all values other than sensory values. Classical physics made all values, including even *sensa*, subjective,

We shall attempt to prove this position fallacious. We shall argue in this chapter that there is no independent world manifest to sense perception or in any way discoverable; that nothing known can be proved to be primarily given; that on the contrary what seems to be primarily given can be proved to be elaborately inferred; and that therefore the division of reality into two kinds (subjective and objective) is untenable. We shall further argue that there are as many worlds as there are unique perceptions; and that a common world exists only in so far as perceptions agree. Perceptions agree to a very large extent, and to this extent humanity has a certain world in common. This is the quasi-independent world of science.

Now if this independent world as postulated by science can be shown to be merely the common world of human perception, wherefore should its laws hold for all other creatures, for ape, horse, ant, sponge, and plant? Any comparison between human perception and turtle perception, for instance, can be only a literary *tour de force*. For a man who sees a turtle on a log there are the two familiar configurations of turtle and log. What corresponds to these configurations for the being, turtle, the human mind can never know "All the thoughts of a turtle," as Emerson said, "are turtle."

The attempt to know a turtle world, or any world other than that of human perception, is the presumption that a man seeing through his own eyes can also look with the eyes of omniscience. One cannot jump on one's shadow. There is only one kind of world for human beings—that which is dependent upon human perception, no part of it can be shown to be more real or less real than any other.

granting objective reality only to extended particles in motion. The new physics has denied objective reality even to extended particles, and made objectively real a particular physical world, indescribable except in terms of mathematics. What we wish to stress is that all three—common experience, classical physics, and the new physics, agree that values such as the ethical, the aesthetic, and the religious, are subjective—not real in the same sense that matter or energy is real.

The scientific realist, in splitting up experience into primary and secondary qualities, is erroneously employing categories of *value* as though *value* were equivalent to *reality*. It is necessary to partition experience into categories according to *value*, but no conditioning of *reality* is thereby implied. We admit that waves of sound have not the same value as notes of music; but we do not understand what it would mean to say that both are not equally real, or that one is objective and one subjective.

If notes of music are subjective in the sense that they are percepts, then waves of sound must be subjective as well, they too being perceived. If waves of sound are objective in the sense that they are located in the external world, then notes of music are similarly located. Is it not reasonable to assert that the whole world of experience is objective in the sense of being externally located by the mind? To define the world as objective presupposes its dependence upon a subject, for except in the subject-object relation "objective" has no meaning. Thus to consider it objective is to consider it not independent.

II. ANALYSIS OF A SENSE OBJECT

We shall now take a single object, assuming it independent of sense perception, and analyse it in order to determine what, if anything, is independently *given*. Suppose we take, for our example, an ordinary wooden baseball bat. It will be admitted at once that the term, baseball bat, is a classification made only with reference to common use and that in this sense "baseball bat" does not inhere in the object. What then is left of this object after we abstract its classification for use? We still have a piece of wood, but "wood" is a classification for convenience also. "Wood" is defined by Webster as "the hard fibrous substance which makes up the greater part of the stems and branches of trees and shrubs beneath the bark, found to a limited extent in herbaceous plants." The essence of this definition lies in the adjective *hard*; for if you consider

the fibrous substance of the banana tree as too soft to come under the classification of "wood," you are forced to the problem of where hard stops and soft begins. No two experts will agree on this point, as such a classification is made entirely for practical purposes, and is, like "baseball bat," a concept. How can we arrive at what is given of this object? So far we are no better off than when we began. At this point the biologist tells us that we are dealing with a certain cellular pattern. The cell is a biological concept, useful in grouping microscopically observed patterns for purposes of comparison. The cell is therefore a classification, not a datum. Let us ask the physicist what this mysterious object is, now that we know it is not intrinsically cell, wood, or baseball bat. He tells us: molecules. A molecule is an entity inferred, not given; a useful concept. And so with his further analysis, atoms, made up of positive and negative charges of electricity called protons and electrons. Here we are confronted with an inference useful in accounting metrically for the dynamics of the situation. Protons and electrons are, according to scientific definition, concepts employed in describing certain differential equations. So far there is nothing given, and we are left with one concept, that of electricity, a name for certain phenomena, and therefore again an hypostatization. "Electricity" is as much a classification as "baseball bat" and no more intrinsically objective.

It is very much like stripping off the outer skin of an onion in order to arrive at "essential" onion. When we strip off this unimportant outer skin we find still another outer skin; and so we must strip and strip again until nothing remains. We are forced to conclude either that there is no "essential" onion or that it consists entirely of outer skins, or, if you prefer, inner skins.

The objection will be raised at this point that we have examined, not the external world, but terms which compare or classify knowledge of it, and that knowledge is admittedly subjective. The primary data of the external world, according

to this argument, are what produce knowledge or sensations in the case of the baseball bat, sensations of colour, hardness, etc., somehow blended into a pattern which is continuous in time. It will be noted that the evidence for such primary data is confined to sensations which contain no warrant in themselves that there is any substance independently existential. If this objection postulates a self-existent matter as defined by either classical or modern physics, then an assumption has been made which cannot be proven by experiment; for matter itself is merely a useful concept covering qualities of the object, perceived in cohesion. Abstract from the observed object (baseball bat) colour, hardness, etc., and you have no perceptual remainder. Except in the association of qualities, the word, matter, has no meaning at all.

Can it be said that sensations of vision, touch, etc., are *caused* by any discoverable primary data? In the perception of a baseball bat no impression is more vivid and seemingly objective than the separation of the baseball bat from surrounding objects in space, yet it is generally admitted that space perception is a sophisticated idea based on anterior evidence: the combination of touch, binocular vision, rotary parallax, etc. Thus a meaning becomes objectified. If this be the case with space perception, why is it assumed that any perception can be attributed to discoverable primary data? For instance, psychologists maintain that infants do not at first perceive colour. Yet if there were independent primary data for colour perception, colour perception would be a mechanical process whenever infants' eyes were open; and infants should perceive colour as well as adults. It is true that the sensation of touch is in operation at birth, and may therefore be deemed more fundamental than vision. This does not give us the licence to conclude that by the sense of touch we are in direct contact with discoverable primary data.

We shall have to examine more closely the psychophysical explanation of perception, i.e. that external stimuli impinging on the nervous system cause a series of unrelated sensations

in the mind, which the mind in turn relates into a unified whole called a percept. Of course no "pure" sensation has ever been experienced; indeed, we do not understand how a sensation without meaning could be experienced or what such an experience could consist of. No matter how "pure" a sensation may seem, it must always be tinged with meaning and is therefore a percept. But the whole psychophysical explanation begs the question, since it takes for granted the existence of an external world in proving its causal theory of sense perception. It employs its own perception in discovering external stimuli which in turn are used as the causal explanation of perception; and so we are given an explanation in terms of itself. For example, in order to believe in the verity of light waves it is first necessary to credit the perception of light waves, or at least the perception of the observed experiments which are responsible for the inference of light waves. However, according to this account, a percept is the mental effect, not the physical cause, so that the psychophysical theory of perception is in the embarrassing position of using an admitted illusion to prove a reality, or employing one unknown to find another.

We have now examined the object, baseball bat, in order if possible to discover primary data. When we followed through both the common sense and the scientific analyses of the object, we found only a series of concepts or meanings attached to a perceptual pattern; then turning to an examination of the perceptual pattern itself, we endeavoured to find whether it had discoverable cause in the external world. We came to the conclusion, first, that what seems immediate can be proved by further analysis to have been inferred, and, second, that there is a point past which analysis is impossible, due to the fact that percepts cannot be broken down into "pure" sensation, inasmuch as every sensation is meaningful and is itself a percept. The attempt to find units of "pure" sensation involves an infinite regress. This judgment forces us to the conclusion that there can be no ultimate distinction between the per-

ception of an object and the object itself. Furthermore, between conceptual and perceptual knowledge the difference is a difference of degree and not of kind. Concepts and percepts finally consist in *meaningful* constructions of primarily irreducible data, in relata serially ordered from relations, which in turn are constructed from other relata anteriorly constructed, and so to a point beyond which the mind is incompetent to follow with analysis.

It must be admitted that in the perception of a baseball bat, one sees a baseball bat and not simply a certain configuration to which the mind afterwards attaches meaning. Perception like conception is always in terms of meaning, whatever that meaning may be, and thus a concept is just as surely inherent in an object as any other meaning, such as hardness, colour, etc. The meaning "baseball bat" is a relatum, analysable into relations of less inclusive meanings, and implies by its functional concept relations beyond itself. Percepts, so-called, are merely the most common concepts; they are the accepted coin in the currency of meaning. Wherefore they erroneously seem to be caused by independent data.

Hence whether we approach a sense object from the objective or the subjective end, we find no datum more ultimate than sense data, but only a series of meaningful constructions, each apprehended as an integral entity, a synthetic whole which can be analysed into less inclusive meaningful constructions. The objective world is an assemblage of such meanings, hypostatized into symbolic entities. We cannot emphasize strongly enough that "baseball bat" has precisely as much objective reality as "wood," or "electricity," or indeed the sensory data, themselves abstractions.

III. ABSTRACTION FROM UNITY

So far we have denied the possibility of proving the existence of an independent world; but this does not lead us to a Berkeleyan idealism. After having demonstrated the absurdity of an objective world existing without subject, we certainly

cannot postulate a subjective world, a mund independent of perception.

What shall we conclude to be the basis of those meaningful constructions termed percepts and concepts? The word, construction, implies something with which to build. We have also used the term, synthesis, and a synthesis is the necessary assemblage of parts into a certain unity. Again, a symbol requires something other than itself which has to be represented; and an abstraction demands a concretion from which qualities are taken. It is very evident from our language that we believe there must be an ultimate beyond experience. Here we are on ambiguous ground; since we are immediately estopped from describing such an ultimate by the synthetic, symbolic, and abstract character of all human thought and discourse. In short, this ultimate is unknowable; yet this unknowable can be indicated partially and representationally by language, although the description of its essence is limited to the verb, to be, without predicate. But we might call it the synthesis of all syntheses, the concretion of all abstractions, and the significance from which all symbols derive significance. It is the oneness which includes all possible units in its unity; any attempt to conceive of it in space and time must be futile.

We have been talking about the infinitely valuable. But infinite value is necessarily reserved from knowledge. Logically it is useless to pursue the subject further: we cannot know the unknowable. Yet we must at this point form a hypothesis as to the relation held by humanity to this final reservation, and as to the manner in which the human world is abstracted from Unity.

It must be remembered that what follows is a metaphysical hypothesis, and as such not finally demonstrable. It has been set up to account for the phenomena of experience, including much hitherto inexplicable. That it is founded on faith we readily admit, a faith held like the belief in the quantum theory is held to-day, or the divinity of Jesus Christ, in the tenth century, and like them supported by and held strictly

accountable to reason. If the reader should refuse to permit the assumption of faith in a metaphysical argument and should insist on tracing his logic back to an origin rationally demonstrable, he would simply be resigning himself to an ultimate scepticism, a Pyrrhonistic self-doubt, itself logically untenable, as Santayana has shown.²

Basically all is one and there is no discontinuity.

Although on the plane of common experience this seems absurd, experience itself begins with individual consciousness, or the conviction of discrete unity, a feeling of existence separate from all else. This feeling of discreteness constitutes the basic human fiction; as though any drop of water in the midst of an undifferentiated ocean should somehow wilfully conceive itself as an individual, or as though any plane which might be cut through a cube should conceive itself as perpetually defined. Carved out of infinite possibility, life is the realization of certain possibilities.³ To arrive at self-consciousness, therefore, it is necessary to push back the continuum in favour of the discreteness of the individual consciousness. Such an effort at suppression, though perpetually attempted, is never completely successful. This results in a fictional distortion of basic unity, which presents the individual by himself, with all else as the world of experience external to him.

It is evident that even on the plane of common experience the individual is never an independent entity but makes continual and desperate efforts to integrate himself with the world of his experience, and to again become an undifferentiated part of the basic continuum. But this attempt is never completely successful, either; and therein lies the dualism of human life. Life thus conceived maintains quasi-independence

² "Belief in the existence of anything, including myself, is something radically incapable of proof, and resting, like all belief, on some irrational persuasion or prompting of life. Certainly, as a matter of fact, when I deny existence I exist"—*Scepticism and Animal Faith*

³ "What we discover . . . is a whole in which distinctions can be made, but in which divisions do not exist"—Bradley, *Appearance and Reality*

precariouly, since it would both preserve and destroy itself, and is thus an unstable balance, a tension between two poles. The complete failure to maintain this tension is death, the restored equilibrium. Life, the fundamental fiction, is identified with strife: the striving of discrete unity to preserve itself, and the striving to merge with basic unity. On the lower plane of discrete unity, life has to deal with conditions, of necessity imposed by the form of its being, which it perceives and deals with as though they were *other* discrete unities. On the higher plane the striving to win back to basic unity is an unrelenting force, omnipresent in human life; at its highest it is the essence of mysticism, the spirit which informs all living religion; it enters as the significant attribute, at least in some degree, into every thought and action.

When we return to an examination of common experience, we find that the concept of discrete unity taken by itself is incomplete. Discrete unity implies the decision of all that which is not discrete unity. What are decided are, of course, all other possible unities or patterns. We have, then, discrete unities, and the interstices which we shall term the background. However, unities are never completely decided or the background annihilated, since such complete decision or annihilation would assume the existence of a nothingness between unities. Nihilty or non-being is inconceivable. There is no radical discontinuity, but a partial suppression of the background. This partial suppression of the background entails the flight of all other possible patterns, of necessity never perceived. The fleeing away of these suppressed patterns constitutes the flight of time. The concept of time thus substitutes for a radical discontinuity between discrete units and is the background.

The concept of discrete unity and the concept of time are inseparable. For discrete unity to be known, it must preserve its identity, and to have identity it must have some endurance, however brief. The world of common experience is one of discrete units identical in time. Time acts as a medium of

connection between unities, which thus become identities. For certain patterns to emerge and endure, as against others which do not, it is necessary for the latter to be conceived of as in flux. To illustrate by visual perception, objects can be cut off from a background only by relative motion between the two. The concept of time thus arises as the ultimate moving background from which unities endure. Reverse the process, arrest the moving background (time), and discrete unities merge, identity is lost. The concept of identity is thus dependent upon the concept of the moving background.

IV. MOTION, TIME, AND SPACE

The movement of identities is the conception of communication across the background. Again, as in the case of time (acting as a medium of connection), an integration is partially effected. In the concept of motion you interpret various patterns as being not various discrete unities but an identical unity changing its form. For consider what would be the effect if various patterns were perceived without identity to pin them together. There would then be a perception, not of movement, but of various static patterns, each with its own identity. A familiar example is afforded by the cinema film. Photographs have been taken of an object in motion, say a man walking. If you look at a section of the film you see a series of separate pictures of men in slightly different positions. Now take this same film and run it on the projection machine and you see on the screen a single picture of one man in motion; you do *not* see a series of static pictures. Here are two possible interpretations of a series of patterns, differing according to the manner in which the concept of identity is applied.

It must be made clear at this point that ultimately there is no choice between the above two interpretations. On the ultimate plane, patterns, identities, and motion, are fictions: symbolical and partial attempts at integration; a thing cannot be said to move or to be static, inasmuch as there is no dis-

continuity. On the plane of common experience, identity pins through certain patterns out of all possible patterns. This selection demands a spatial position for such identities; but those possible patterns which have not been selected have no spatial position, and therefore are potentially everywhere. This explains motion in the only way that does not do violence to logic. For an object to move, it must arrive and leave a single point at the same time. This is inconceivable; but when you remember that the pattern is already *there*, since every possible pattern is always potentially everywhere, and that it did not have either to arrive or leave, motion ceases to be irrational.

The apparent irrationality of motion has troubled philosophers since the days of Heraclitus and Zeno. For Heraclitus, "being and non-being are one and the same," an affirmation of ultimate continuity. From this observation he drew the illogical conclusion that all is flux, *παντᾷ ῥέει*, illogical, because a flux must be defined by its relation to some static identity. Zeno attempted to rationalize motion, and in so doing set forth this paradox: (a) how can an object be said to move if it must be at one point at one instant and at another, another, or reversely phrased, (b) how can an object be and not be at one point at one instant? According to our explanation of motion, Zeno set two problems, not one, for which we give two interpretations. In (a) separate identities appear at various points at various instants; in (b) one identity is preserved throughout.

There are, then, two ways of realizing or integrating the background: either to conceive it moving, as time, or to conceive identities communicating across it, as in the perception of movement. The concepts of time and motion are inseparably interwoven, because each can be resolved into an attempt to deny the category of non-being. Either the background is integrated (time), or there is a continuity to patterns (motion).

It follows that, while you can experience motion, you can never experience time; since what you do experience, when you conceive time, is the persistence of patterns as identities.

To hypostatize time into an independent entity is to ignore its entire dependence as a concept upon identities. Thus your conception of time varies according to whether you intensely realize identities, or allow them to merge into the indiscriminate background. In order to have a common time reference, conventional time-intervals (such as hours, years, etc.) have arbitrarily been established. Thus it has been agreed that a certain familiar uniform movement over a certain space shall express a certain time-interval. When you say "time has flown," you mean that identities seemed permanent and that you are surprised to note how the hands of the clock have flown. All the reference to time as an entity in common experience is reference to conventional time-intervals; and all proper hypostatization of time as an independent entity is of clock time. Clock time, or time-interval, is merely a certain experience of movement

It is often thought that there is an experience of time as distinct from motion, a few philosophers as well as some modern physicists have uncritically made this assumption, and have gone on to discuss the experience of *duration* or *becoming*, which they distinguish altogether from clock time. We believe that the claim to such an experience is a confusion due to the metaphorical use of the word *time* to denote *change*. But change is inseparable from motion, since it is the movement of a pattern within an identity.

Nevertheless, the notion that, somehow, time as distinct from motion can be experienced, is stubborn. It is held that if you close your eyes and do not move, there is a definite experience of *enduring*, or of the "flow of time." But you do not exclude movement in this naive experiment: there is the beat of the heart, the rhythm and flow of the blood, and numerous unidentified sensations of vaguely remembered movements. There is no experience of time; it is a concept wholly dependent upon identity.

Let us further examine the concept of time, in order to show that time and motion are indissoluble. This might be

questioned in view of the fact that time moves in one direction only, whereas an object can move in any direction. This one-way direction constitutes a description of time, and further indicates its usefulness as a concept. Objects, too, move only in one direction—at a time. The directive element can be set only one way, whichever direction an object takes in space. It is therefore not so surprising that time moves only one way; no more surprising than that the sun should set in the west, west being where the sun sets! If you cross the street, you move in one direction from the standpoint of your past location; if you turn around and come back, you are moving in the opposite direction from the standpoint of your first past location, but in the same direction from the standpoint of your second past location. That is, if a man starts out from *A* and moves toward *B*, he moves in one direction, *AB*. *A* is here his past, while *B* is his future. Now let him traverse the distance, *BA*. *B* is now past and *A* future from the point of view of *B*. However, from the point of view of *A*, he keeps moving into the future. Time is therefore seen to be a spatial orientation, wholly dependent upon the direction of motion of an object; as an arrow, which always points ahead no matter which way it is turned.

The concepts of time-intervals and space-intervals⁴ are concepts of measurement, and have nothing to say of the content they delimit, but arise from the description of motion and are its co-ordinates; velocity cannot be described without both, and neither has any meaning except in relation to velocity. Take the timing of a horse race as an example. Here you have the movement of the horse over a certain given space, let us say one mile, and the movement of the hand of the watch over a certain given space, the dial. In timing the horse you are comparing velocities: that of the watch, known to be practically uniform and familiar; that of the horse, more or less unknown. Both start covering ground together and both

⁴ We use the term space-interval in the sense defined by physics. intervals of distance (miles, metres, inches, etc.).

stop together. It is by the space covered by the hand of the watch that you give a description in time units of the velocity of the horse, where the space is known. In other words, the measurement of time is velocity divided by space. Conversely you divide velocity by time to procure space.

Now see whether either space or time has any meaning by itself. A year is a familiar measurement of time, and you think of it in terms of time, and measure the span of your life by it when you talk about how many years you live; yet a year is roughly the space covered by the earth in its complete revolution around the sun. Common sense will readily admit the above; yet a little reflection will show that neither is space an independent concept. There is of course no perception of space-intervals. It will not be argued that space measurement is given, for if it were we should not need foot rules or metre rods. Neither are dimensions differentiated in perception. Depending upon how an object is presented, the height, breadth, or depth, can be reversed without doing violence to its pattern.

The term, space perception, is an example of the impossibility of absolutely separating perception from conception. Objects can be perceived or conceived in patterns involving two dimensions, or perceived or conceived in three. Moreover, space in this sense is neither measurement nor dimension but an "emptiness" which is simply a logical category representing the absence of pattern.

When astro-physicists describe the distance of a star from the earth, they use the term "light year" which involves a time measurement. It is also true that no measurement can be made without motion of some sort. Basically all space measurements attain a meaning only because some velocity between two points is familiar. An inch is meaningful only in connection with the familiar velocity of the eye in covering it, a fact seldom remembered.⁵

⁵ That velocity is purely relative and demands for its definition a frame of reference has always been a matter of common observation.

What kind of explanation of past, present, and future does our analysis of time and space lead us to? There is the eternal present; but human perception is limited, and so partitions are set up between past, present, and future. Thus whatever is out of the range of your perception is not in your present, but in your past or future. Your past is that part of the eternal present which you believe your perception to have traversed. Your future is all possible parts of the eternal present which you believe your perception may traverse. Past, present, and future are relative terms of orientation, valid only for the mind of one individual. What is past to one man can be present to another, and *vice versa*. Also, what is present, as well as what is past, to one man, may be part of another's future. To return to our horse race, take the point of view of a spectator who is so located in the grandstand that he is able to see only two sections of the track: the start as far as the first turn and the finish in the home stretch. Here is an event with a clearly definable past, present, and future. Let us now assume that the race has begun and that the horses have passed out of his range of vision of the start, and that he awaits their reappearance. At this stage, his present is whatever he sees in front of him, hiding the track; his past is the start as far as the first turn, and his future is the home stretch. Now suppose our spectator to be in a captive balloon, some thousand feet above the centre of the race-course. The entire track, including what was formerly for him past and future, lies in his present. Thus the temporal order turns out to be a spatial order with an orientation set up as to direction of motion.

The common conception of the present as only a meeting point between past and future, for all world instants, is due to the fact that men are synchronized by clocks for practical convenience. As shown, you think of clock intervals when

Since time and space measurements are the co-ordinates of velocity, they also demand frames of reference for unambiguous interpretation. This is the substance of Einstein's Special Theory of Relativity. *Vide* Chapter III

you think of time, but clock intervals are arbitrary segments of clock movement, which is a continuous movement. This explains the fallacy of conceiving the present as an infinitesimal instant in the meeting of past and future. If you carry this idea to its logical conclusion, the error is apparent. Continuous movement has no interval, however infinitesimal; and if the present were but a line demarking the past from the future, there would never be experience of a present, and consequently no memory of a past nor thought of a future.

The common confusion between time and clock intervals is due to the belief that clocks are mysteriously synchronized with the eternal flow of events, and accounts for the erroneous conception of past, present, and future. This belief is manifestly absurd; an hour is an arbitrary convention, otherwise ambiguous. Clock intervals serve a useful social function, but unfortunately persist in seeming mystical, as though an hour which is past is an *entity* gone for ever. This fallacy is reinforced by the experience of change and mortality. Thus the past has become for humanity a vague notion of something which cannot be retraversed. This is partly true, but, in the sense generally understood, not true at all. If you leave your house, walk to the corner, and return, you may find practically nothing changed; your bodily state has altered little, yet you feel there is a difference attributable not to a change in the situation itself but to something which has to do with the fact that your watch has ticked off five minutes. It is certainly true that no situation is ever exactly repeated; but the difference is attributable to change or movement and not to time-intervals (except in a kind of poetic sense). If you wish the term, time, to denote change, you must bear in mind that change does not proceed like the hands of a clock at a uniform velocity.

The past is different for every man, and each man's past meets the past of other men only at some points; though even here the contacts are doubtful. The past is only vaguely marked into time-intervals, if at all; and inasmuch as it exists only in memory (which is present) cannot be said to have

existence as a past. The notion that some verbatim record of past events exists, ineffably, in "the corridors of time" is nonsense of the most romantic sort. If an event has been forgotten by everyone and was never recorded, it cannot be said to exist in the past, or to exist at all. If, on the other hand, an event is remembered erroneously, it becomes real and continues to be remembered in the present, although it is referred to as in the past. The name, Napoleon, recalls some image to every mind, and is a composite of all that has ever been remembered and invented of that personality. To separate truth from fiction in such a composite is not only impossible, since all records are romantic, but also quite meaningless. The label *Napoleon* now covers something slightly different for everybody; each man has his own private Napoleon and makes a contribution however small to the general legend. The past has not recorded one "true copy." There is no past as the past is generally understood; the past may be defined as that part of the eternal present which is beyond sense perception but made immediate by memory.

The common conception of the future as "that which never arrives" is the one we wish to encourage. Phrased differently, this means a future of all possibilities which are not realized. This popular conception is mixed with the further notion that the future somehow exists conditioned as to possibilities. These two concepts are irreconcilable inasmuch as they constitute a contradiction in terms: one predicates a future that cannot arrive, the other a future that must arrive. The latter notion is erroneous in that it confuses present and future; when events "arrive" they are in the present. When you say "to-morrow never comes" you are correct, but somehow you think that it will come.

Only imagination can bring into the individual present that which we have termed the future. If you do not realize your imaginings, you have not limited the possibilities of the future; for what you realize is the present. To say that you proceed into the future is to say that you can realize that which can

never be realized. You realize beyond sense perception through imagination; and imagination, like memory, is part of the present. Thus the future is all of the eternal present unrealized.

V. TIME PARTITIONS KNOWLEDGE

In what follows, the terms loosely classified as percepts and concepts, imagination and memory, will be related with the analysis of time as set forth above.

Those constructs which seem given to the apprehension of an individual constitute his present. It becomes necessary here to repeat and emphasize that the terms, percept and concept, are not mutually exclusive. We found in the analysis of a percept only a series of concepts in a certain order of less and less inclusive meanings, until we arrived at a basic concept—discrete unity. Discrete unity we found to be the first condition of consciousness; without it there can be no perception, memory, or imagination. Beyond the concept of discrete unity, analysis by interior evidence is impossible.

Why should there seem to be a distinction in experience between percept and concept? A percept consists of layer upon layer of concepts, wound around the basic concept of discrete unity; and has an identity in much the same manner as a roll of paper. Thus a percept is a vortex of concepts with a centre of meaning which has long been accepted and is ineradicable from the human mind, and hence defies dissipation. Percepts have been given spatial extension, position, and substance. The only further explanation we can offer for the centres of percepts is to say that they are equivalent to those *prime phases* of basic unity which are so simple, so abstract, and so purged of meaning, that they cannot be hypostatized *per se*. Although these prime phases are necessary to the form of being, it is impossible to hypostatize aspects so abstract. Reason refuses to function with them, and so adds layer upon layer of significance. These prime phases have been availed of by reason as *tabulae rasae* on which to write its symbols of higher legible

meanings. Prime phases taken by themselves barely attain meaning.

The "blind world of matter" finally resolves itself into a composite of these prime phases, inevitable simple relations, posited by the peculiar form of being which distorts basic unity where contiguous, into certain discrete unities. As a result of the imminence of prime phases, they are dealt with in common experience as though they were objects independently given.

Yet the necessity of prime phases acts as a restriction to reason in all efforts to integrate experience. If reason were continually importuned by prime phases, it would never have arrived at any integration of experience. This explains the need for assigning a quasi-independent category to matter; for with the ability to relegate matter (prime phases) to such a category, symbolism and significance become effective toward an integration by means of concepts, and man reveals his essential nature as a being partially liberated from the "blind world of matter."⁶

We now come to the usefulness of time-partitions: past, present, and future. The present of the individual is the time category which deals with whatever of these prime phases demand attention, together with the greatest synthesis that can be made out of them; his attention is the centre and the periphery is limited by the possibilities of the synthesis which becomes vaguer and vaguer as it spreads outward, until it disappears into the background. Prime phases are dealt with exclusively by the present; the present is the scene of the eternal compromise between discrete unity and significance. It is thus always limited to a certain spatial division, partially defined against the infinite background.

This very spatial limitation is what gives rise to the ideas

⁶ Human bodies are of course part of the "world of matter," and sense organs as a definite part of symbolism are assigned a separate and exclusive function, so that the entire domain of matter may be ordered independently. Thus, paradoxically, eyes serve a useful purpose when they shut off vision!

of past and future. The past for the individual is whatever meanings imagination selects from that part of the eternal present which does not lie in the spatial frame of that individual's present, when such meanings are given a factual authenticity by belief. The future for the individual is whatever meanings imagination selects from that part of the eternal present which does not lie in the spatial frame of that individual's present, when such meanings are *not* given a factual authenticity by belief. Conception, memory, and imagination are essentially the same process: a method of hypostatizing meanings through the use of images or symbols. When employed in connection with the present, i.e. to invest prime phases with rational meaning, it is called conception; when employed in connection with the past, i.e. to hypostatize meanings believed existent outside the frame of the present, it is called memory, when employed in connection with the future, i.e. to hypostatize meanings believed possible but not existent, it is called imagination.

Time reference, as subdivided into past, present, and future, is a necessary categorizing of knowledge, due to the limitations of man on the plane of discrete unity, together with his effort to integrate his experience. By the use of time reference he is able to deal with prime phases and at the same time free himself to some degree from their insistence. So he arrives at a method of deriving significance from his world by the devious aid of time-partitions.

VI. METHODS OF INTEGRATION

Conception is the means by which experience can be integrated and related despite the spatial limitation imposed by prime phases. Paris and Detroit are miles apart in perceptual space, yet when you say they are both cities, you are integrating them in at least one relation.

The integration or relation of experience is accomplished by two methods. These are (1) classification (particulars and universals); (2) causality (sequence of cause and effect). In

popular opinion the first is considered an independent mental process, and the second an independent physical process; it is believed that classification has no effect on the entities classified, and that causality operates as a blind force unaffected by the mind. This distinction will not bear examination. Paris and Detroit are cities: classification. A city may be defined as the congruence of large numbers of people in one locality; the congruence of people in Paris and Detroit is the *cause* of their being cities: cause and effect. Or again, lightning *causes* thunder: cause and effect. Lightning and thunder are manifestations of a certain kind of electric discharge: classification. In both cases there are two attempts to relate concepts which, though discrete, are yet associated. The association in both cases is due to the definitions of the entities under consideration, which definitions are determined by the manner in which you choose to break up or simplify the situation. Wherever you deal with one unity, abstracting particulars, and relating them to universals, you have classification. Yet it must be noted that particulars persist in being considered parts of the unity. Wherever you consider separate unities related as to motion or function, you have cause and effect. For example, you may consider a table as a unity, and its legs as particulars; as such the legs may be related to the universal, legs. But note that this classification is meaningless unless you preserve the identity of the table as one unity. Now consider the table not as a unity but as made up of legs and top. The legs now support the top, or are the cause of the suspension of the top. In this latter example you have posited two unities: legs and top, and have considered them as functionally related. Cause and effect implies a function, which is potentiality of motion. Thus, whether cause and effect or classification is employed, depends wholly upon the manner in which you choose to divide a segment of continuity; cause and effect and classification are optional judgments. The phenomena of lightning and thunder may be regarded as visual and auditory particulars of one unity: electric discharge; or as two separate unities:

lightning and thunder, in which case lightning is the cause of the thunder.

That there is no innate distinction between a cause and an effect will not be denied; the distinction relates exclusively to the temporal order. Any part of an event which precedes another part may be taken as its cause. For example, a man takes his family out for a Sunday picnic. You can say with equal truth that the cause of this event was: Sunday, a fine day, the automobile, the money to buy petrol, his wife who coaxed him to go, etc. The effects are as infinite and depend, as do causes, upon the simplification of the event, which in turn depends upon where you choose to lay emphasis. You may list as effects of the picnic: an enjoyable day, a punctured tyre, physical well-being, money spent, etc.

Since science, however, deals in the causality of an ideally simplified situation, necessarily setting up one cause and one effect, it is not surprising that its conclusions should be interpreted as deterministic. Whenever water is heated to 100° Centigrade, it boils. This is absolute cause and effect. A temperature of 100° Centigrade is the cause, and boiling the effect. Like all other causal laws of science, this one is so framed that it allows of no outside interference, and so is an ideal situation. Practically, an indefinite number of conditions might prevent the water from boiling, but these conditions are ruled out by the language in which the law is stated. Determinism is inherent in the logic of the phraseology. Consider just what such determinism sets forth: that water boils when it boils, 100° Centigrade being the boiling point of water. Thus all deterministic laws are truisms, not forces which exert coercion on anything.

Both cause and effect and classification are arbitrary methods of integration, and their validity depends upon the relationship to be emphasized. The validity of these two methods of integration is thus relative, not absolute. Absolute law cannot exist, since such law would be a limitation on the illimitable. Laws are thus resolved into limitations which humanity has

necessarily put upon itself. Here determinism and free will become one and the same.

VII. OBJECTIVITY OF CONCEPTS

We have shown that the objectivity and reality of the world of matter lie in hypostatization of prime phases, simple relations of basic unity inevitable to the form of human being. Concepts are, as we shall show, another order of hypostatizations. Such concepts as business, virtue, the price of wheat, altitude, the weather, etc., are always treated as entities, often as though they were sensible objects. Whether they are thought of as facts or fictions depends upon the state of current belief

The average man believes in what he calls "hard facts" as strongly as though they were objects he could touch; indeed his adjective "hard" gives the show away. When this man says "give me facts, not theories," he is not aware that what he considers facts are only fictions long accepted. If this man has a shirt, he views the possession of it as a fact. But what a complexity of belief is involved in what to him is a simple fact! The mind reels before this dizzy prospect, but here, at any rate, are a few of the most obvious beliefs. Possession based on the belief, shared by those living in his commonwealth, that the shirt is his private property, which is bolstered by the further faith that if anyone tried to take it away from him without his consent he, the owner, would be protected by his legal rights. The concept, shirt, itself is based on the belief, to which most men subscribe, that a certain type of material, cut into a certain pattern, and sewn together in a certain manner, results in a garment which is to be worn in a certain way and no other. It is obvious that this exposition could be extended for ever, for each belief is in its turn dependent upon anterior beliefs, *ad infinitum*. For instance, possession connotes monetary value which is in itself a belief; and again, monetary value is dependent upon the belief that the shirt will not suffer immediate disintegration. The solidity of these facts melts when the generality of men ceases to believe

in them. Thus an economic revolution might upset the belief in possession; a change of fashion might upset the belief that shirts are proper articles of clothing; the most fickle rumour concerning the shirt market might affect the belief in monetary value; and a chance fire which men did not think probable might destroy the belief in stability. Thus concepts become "hard facts" through the predominance of belief in them; that is, they become reified in direct ratio to the universality of belief.⁷ Facts are like ghosts in that they are dependent upon belief for their verity; lacking belief, they are both considered fictions

Inasmuch as the degree of hardness of facts results directly from the degree of belief, facts are a consequence of human attitudes, and no "brute facts" exist. As long as such hypostatizations seem valuable or practical to humanity, they keep their factuality, and seem independent of the mind. The force of gravity is a concept which would have been supererogatory to animistic civilizations; it was an evidential fact to the eighteenth and nineteenth centuries; whereas to twentieth-century physics it again becomes a supererogation. Without such fictional concepts, man would be hopelessly involved in a welter of details, language would be impossible. When you say "walking is good exercise," you are using a convenient shorthand which you anticipate will be easily interpreted. If you had to define "walking," you would have to employ a further number of fictional entities, such as motion, which in turn would have to be defined; and so you could never convey the simplest meaning. The hypostatization of meanings into entities is a first necessity of reason. But necessary as these fictions are to reason, they yet constitute obstacles to reason. So long utilized, they become nearly irrefrangible and almost impossible to dissipate; though each contains only a relative measure of truth. They become part of the very fabric of the

⁷ We might compare, in passing, prime phases, in which probably all animal life believes, with concepts, in which probably only humanity believes, and which cease to exist when such belief ceases

mind itself; to tear them all out at once would be to destroy sanity. For this reason new ideas always meet with intense hostility, or they are scorned as unthinkable vapourings; but once accepted they are held tenaciously, become the new dogma, and are savagely defended against further incursions.

VIII. VALIDITY OF FICTION

We have analysed the common categories of experience, known as: the world of matter, time, space, motion, the world of ideas, classification, and cause-and-effect, with a view to determining whether any of these categories is *given* as ultimate. We found that each lent itself to further analysis wherein its value was seen to be relative, not absolute; that is, relative to and representative of a basic continuity, unknowable *in esse*. This basic continuity is broken up and distorted by the concept of identity. It has been implicit in our argument that identities are inexplicable save by the postulation of basic unity. Identities, or quasi-abstractions from basic unity, yield the world of reality or experience in which all values are perforce representational and fictional.

So far we have brought out only the relative or fictional value of the world of reality. Shall we then conclude that we all move and have our being, phantom-like, in a world of false appearances, wherein judgments are without validity, and wherein no meaning can be assigned more significance than any other meaning? Obviously not. Since we have termed these constructs of experience "fictional," we must emphasize that fiction is the partial and symbolic representation of truth. Although Don Quixote is a character in fiction, it would hardly be suggested that he is either wholly false or non-existent: he is a symbol or representation of certain aspects of human nature, and as such existent.

Your realist, so-called, asks you to believe that man lives in a world of false appearances. Despite the statement of the realist to the contrary, he is led necessarily to the conclusion that the external world is so entirely different from the human

perception of it, that human perception itself must be fantastically erroneous. Leaving aside for a moment the question as to how this fallacious perception could ever give the realist anything he would be willing to believe, his doctrine if followed through would be pernicious in the extreme, inasmuch as it would discount all experience, or at best throw the shadow of doubt over it. Such an attitude would logically and inevitably lead to ultimate scepticism, which is untenable by living beings.

All experience is equally real and has significance on its proper plane. There is but one reality to which all human experience belongs; there is, however, a hierarchy of significances or values. The truth of an identity depends upon its proper evaluation; it can be symbolically true. It is only when too much value is assigned to an identity that the limitation of its symbolic fiction becomes apparent, resulting in confusion, absurdity, and the crying need for a new order. We cannot insist too strongly upon the reality of all experience, as well as upon the disastrous falsity of an identity made too valuable. When a man who loves animals refuses to eat meat, he is taking one abstraction too seriously and dealing with this one identity, when he should be dealing with two. Surely it cannot be said that he loves the flesh of animals; rather it is the living and moving animal that appeals to him. Live animals are one identity and meat is another. The man is therefore confusing identities because of an improper evaluation. He is guilty of a slurring of identities, due to a sentimental bias; and the result is absurdity. But the same mistake occurs in places where sentiment is notoriously excluded; and then the result is not only absurd but disastrous as well. The physicist, for instance, is guilty of a corresponding error when he asserts that, because in the chemical analysis of protoplasm carbon is always present, life is a property of the carbon atom. The identity, carbon, is not a property of protoplasm but of the *chemistry* of protoplasm.

We cannot repeat too often that value is not synonymous

with reality. You use a razor to shave your face and perhaps an ideal to inform your conduct; these are equally real. To assert that they have equal value would be to consider them interchangeable in common use; but we would not advise you to shave with an ideal or employ a razor to inform your conduct. Again, a stone and a prejudice are equally real, as you will find if you stumble over the one or bump into the other; yet if you treat them as though they were of equal value, you will not get very far toward removing them.

Our metaphysic gives to truth an unequivocal interpretation. There can be no absolute truth in human cognizance, yet human truth can approximate absolute truth. This follows from our argument that the fictional symbolizes the absolute.

Thus every statement relates in some measure to truth, and no complete falsehood is possible, save the falsehood of denying all that is: being cannot be said not to be. The limit of human truth is the limit of its inclusiveness. Since human beings are limited, no finality can be imparted to statements involving universal application; whereas some vestige of truth, however small, rests in every belief, even after it has been abandoned. A deliberate falsehood must contain some element of truth, else it could not deceive. If you say that fish wear neckties, you are stating a piece of nonsense which not even the most ignorant would construe as a falsehood. But if you say you had gone fishing and caught forty fish, when you *had* gone fishing but caught only five fish, you are stating a falsehood, because there is enough truth in the situation (i.e. that you *had* gone fishing and *had* caught *some* of the fish) to have the statement believed.

The falseness of a false statement, whether deliberate or no, resides in what is suppressed, denied, or conceived as non-existent. The truth of a true statement is measured by its inclusiveness, that is, by how completely it embraces all aspects of a situation. There can therefore be lesser truths and greater truths with regard to one situation at the same time; neither totally invalidates the other.

. IX. DIRECTION AND PURPOSE

All knowledge is at once subjective and objective.

The subject of knowledge is the mind; nothing can be known *about* it, nor is it a self-existent entity. According to the causal theory of perception, the mind is located within the physical body, specifically in the organ known as the brain, and sometimes even identified with the brain. But this is only metaphorically true, the mind is without location; it is simply *that which knows*

The object of knowledge is the world external to the mind, and includes the brain as well as all other parts of the body. It includes all conceptual entities, whether they be attached to prime phases or not. It is *that which is known*. Thus neither has the object of knowledge, self-existence. The character of objective knowledge is relative, comparative, and infinitely inferential. Much can be known *about* the objective, but it can never be known in its totality.

Thus the subject is knowledge which is immediate but without predicate, the object is knowledge, mediate in that it is external to the subject. The dualism of knowledge as subject and knowledge as object follows from the basic fiction of existence, arising from the quasi-division of the individual (a discrete unit) from the infinite (the unity). Reason assembles its fictional identities into a representational world which is wholly objective, weaving thus symbolic legends into more and more meaningful syntheses, in an effort to inform all experience with significance, a significance which approaches but never reaches the non-symbolic ultimate significance. The perpetual quest of significance is thus limited to symbolism, the human form of that quest, since the necessary continuance of the fiction of individual (discrete) existence prescribes man's search to the finite, i.e. the fictional or symbolic. This gives the fatal dualism of life: (1) the continuance of the fiction of man's independent existence, and (2) his inescapable impulse to merge with the infinite, the unity of which he is part.

The solution of the purpose of life is kept under a double lock; to open it requires two keys: discrete unity, as it struggles to maintain itself, and as it yet strives to win back to all-inclusive unity. As you approach the ideal of discrete unity, you gain in decision and lose in significance; on the other hand, as you approach significance, you lose in decision. Thus the limit is set at both ends and both ends are equally beyond human attainment.⁸ An uncertain equilibrium is continually being set up between these two ideals, the manifestation of which is art. Matter as we come to know it is itself a work of art, that is, a balance between prime phases, and whatever meanings can be attached to them. As we have pointed out, man is unable to deal with naked prime phases because they constitute concepts too abstract,⁹ and so some significance is always attached to matter. But there is a limit to the significance with which matter can be endowed, and this is why we assign to it the lowest position in the hierarchy of values. The weight of significance that an identity can support gives it its position in the hierarchy; and so the ability to bear significance can be seen to be the criterion of the hierarchy of values. We find that we are thus able to group all experience into a hierarchy, with matter as the lowest order and deity as the highest.

How is reason to weigh significance? We enunciate this as a principle, which reason can grasp but not control: *identity inevitably attaches itself to the higher significance in preference to the lower*. This principle is so universal that any aspect of experience, however trivial, may be taken as an example. It will be admitted that a matchbox can be seen as a pattern of two dimensions; yet no one perceives it that way except by a deliberate effort, and then only temporarily; the significance

⁸ The further you search into minutiae, the further you get from the meaning of life, i.e. the inclusiveness. The notion that the analysis of matter will yield the ultimate nature of reality is a self-evident fallacy. It is nonsense to say that the world of everyday experience is a misinterpretation of the microscopic.

⁹ Mathematical physics attempts to approach this limit of abstraction.

of a matchbox does not lie in its pattern but in its function. Identity for all observers is attached to it as a three-dimensional functional object. The identity, Percy Bysshe Shelley, is attached to the author of the poetry, because in this connection Shelley attains his highest significance. This identity was once attached to another significance, namely a flesh and blood body, but there is no more reason to remember his body than to remember the bodies of millions of his contemporaries; and indeed identity refuses to discriminate between dust and dust.

The poetic statement that time is the filter through which only the higher significance is allowed to pass, is the truth, inversely stated. It is important that the reader here remember our definition of time, for time is not the mysterious entity it appears in the above. Time is the complement of the concept of identity, consequently reference to the past is reference to identities which desert from lesser significances and inevitably persist. This is the final meaning of time in common experience. As these lesser significances lose identity, they do not go into the past. They cease to exist at all; as identities they deliquesce. John Smith, an acquaintance of yours, has a fine appreciation of painting but irritates you by his slovenly dress and appearance. Now, let us say, John Smith moves away, so that you have no more opportunity to be with him. The memory of his slovenly appearance becomes less and less acute, and you become increasingly aware of his fine critical ability. Similarly, François Villon was a low pickpocket and a *macquereau* to his contemporaries and would have seemed so to us had we been living then, to-day these same activities are slurred in favour of his poetry, and the *poet* has become a lovable rogue. Yet the man who steals your watch is promptly turned over to the police, whatever the quality of his poetry!

We are now in a position to indicate the direction of human existence, which offers some hint of its purpose: the higher significance demands preference over the lower significance, however acute the latter may momentarily be. And this demand

is manifested in the persistence of the more significant identity. The symbolism of all human endeavour tells this same tale—the pathos of proximate ends, and of temporal concerns and appetitions, opposed to the tragedy of the craving for significance which sometimes uses them and sometimes crosses them, but always leaves them behind in its transcendent efforts.

Without an indication of some direction or purpose of life, we would deny the possibility of any speculation.¹⁰ Contemporary science, which distrusts all teleology, is nevertheless involved in teleology in its every induction; else it would be content with pure description. We might add that in science natural laws speak of “tendency,” which is direction or purpose thinly disguised; to object that natural laws imply only a mechanical tendency is simply to postulate a mechanistic teleology. Purpose is no less purpose for being incredible.

X LEGEND

Reason weaves its symbolic legends out of the fictions of the representational world with a view to relating the greatest number of identities into a single grand synthesis. These legends are stories wherein certain fictions are given plausibility and logical order. By the use of the term, legend, we wish to emphasize the fact that such syntheses are only symbolically true. Thus all bodies of knowledge are legends. There is the legend of physics, for example, the legend of biology, and so forth, besides the altogether different legends of common experience.

The relating of all symbolic fictions into a single legend is an ideal which can never be attained, inasmuch as identities are valid only for certain relations, and therefore must be embraced by particular legends. Sometimes, however, identities of one legend may seem to overlap with those of another. “We know how wide a gap there is between the atom of chemistry with its multiple and mysterious qualities . . . and

¹⁰ We admit that the direction we postulate calls for the most exacting proof. This proof will be submitted in subsequent chapters.

the atom of physics of which the essential characteristic is its possession of only a single property, mass."¹¹ In the legend of common experience, change is an important element, whereas in the legend of physics, change is reduced to the motion of unchanging entities. The attempt to set up a single legend as authoritative, and to reduce all other legends to it, is always doomed to utter failure, since it presumes that one kind of experience is more *real* than any other.

In the legend of common experience, man is rooted in matter¹² and the form of his being is material. His destiny holds him to the world of matter, yet drives him on through it in the quest for ultimate significance. This dualism he is constantly attempting to resolve into an equilibrium (art). Such equilibriums of form and content are known as things. These appear simple and given, although they are complex and elaborately inferred. The understandable error of imputing simplicity to what is highly sophisticated, arises from the fact that when man arrives at consciousness he is already *in medias res*. The baby of two years is highly sophisticated, at least in perception. In this legend of common experience, identities are fixed, and time, constantly flowing, "bites into" and changes them. The legend of common experience is action. In order to comprehend the meaning of this legend, it must be understood that the whole end and *raison d'être* of action is value, and its postulates are not to be judged except in relation to this end. Thus to compare scientific deductions with common-sense experience to the detriment of the latter, is to impute an exactness to common-sense knowledge which it does not need to claim. The appeal to common sense as a proof of any proposition which does not lie within the sphere of common sense, brings about a confusion of legends.

The legends of science correspond in number to the number of sciences. Each proper science is an attempt to explain and unify a certain group of data selected from experience from

¹¹ Boas, *A Critical Analysis of the Philosophy of Emile Meyerson*

¹² Substance, not the porous electric field matter of physics

a single attitude. What makes one science distinct from another is its peculiar canon of selection. The legends of science are occupied with ideally simplified worlds; their subject-matter is never encountered in common experience; ideal entities, such as chemically pure iron, the ideal gas, the economic man and the pure Nordic type. To condemn science by saying that its identities have no exact equivalent in common experience is to misunderstand completely the purpose of the scientific legend. The purpose of the scientific legends is to render more discrete and abstract all those aspects of experience which are too coated with meaning in the legend of common experience, with a view to their eventual usefulness¹³ "Water is a wet colourless liquid, relatively heavy, which prevents combustion; H_2O is a compound of two gases, one the lightest element known, inflammable, the other only sixteen times heavier, aiding combustion. We can see how hydrogen should have *come out* of H_2O but not out of water"¹⁴ In the legend of common experience, when the temperature is lowered to a certain point, water ceases to be water and becomes ice, but in the legend of physics, H_2O is solidified at 0° Centigrade, this is not recognized as a change of identity, but simply as a rearrangement of molecules. Water is what we drink and bathe in, and has other common qualities with which science is entirely unconcerned. The legend of science is concerned only with the states of H_2O and with its analysis.

It is highly indicative that, in those legends of science which are the most developed and successful, time is not an element.¹⁵ Physics and mathematics, for example, are nearly indifferent to it, and their entities are not subject to age or date. Indeed, both physics and mathematics tacitly deny change, their propositions employ the sign $=$ which indicates that they can be

¹³ No true scientist concerns himself with what is useful, but this is the true aim of his science, whether he is aware of it or not. Witness conic sections, a result of "pure" speculation, and their later use as an aid to navigation.

¹⁴ Boas, op cit

¹⁵ The concept t of physics is not time as we have defined it, but time-interval.

read either way. We account for the absence of time in the legends of the successful sciences by their justifiable avoidance of the problem of value. As we have stated, time in the legend of common experience is the persistence of the more significant identities, in comparison with the deliquescence of the less significant. Thus time in this legend assumes the rôle of the critic of significance or value. In the legends of science, however, the subject-matter is treated as though all of its entities were of equal value, or, in other words, the question of value does not arise. Vector analysis, the quantum, the speed of light, and molecules, are all on an equal footing as to value. Logically, the elimination of the scale of value exacts the elimination of the concept of time.¹⁶ We must urge here that the dissimilarity of the two legends as to the question of value and time does not imply that one is true and the other false; for both are legends, and as such relatively true in different ways.

To attempt the reduction of the legend of science to that of common experience, or, conversely, the reduction of the legend of common experience to that of science, is to confuse categories to the point of committing intellectual suicide. In the first instance, scientific speculation is rendered impossible by besetting it with values which are extraneous to its investigation of the discrete rather than the significant. This error has given rise to a school of empirical philosophy which enthrones common experience. If strictly logical, this school would have to refuse the right of reason to operate at all, inasmuch as reason cannot function in common experience or elsewhere, without abstract entities. In the second instance, all human values cease to have any understandable existence, by the bifurcation of reality into primary and secondary qualities, whereby significant values are assumed to be fanciful,

¹⁶ The second law of thermodynamics proves this point. Inasmuch as this law deals in the "availability" of energy, which is a judgment of value, time is necessarily a factor, in exception to every other law of physics.

leaving a colourless, soundless world, and assigning to the mind "the greenness of the trees, the song of the birds, the warmth of the sun, the hardness of the chairs, and the feel of the velvet."¹⁷ This leaves for the external world only "the conjectured system of molecules and electrons which so affects the mind as to produce the awareness of apparent nature."¹⁸ This enthronement of the scientific legend determines the modern cosmology and creates a world alien to whatever is significant, i.e. essentially human. Also, it necessarily makes matter the supreme metaphysical category.

Somewhere between the discreteness of the legend of science and the significance of the legends of common experience lies the legend of history. It takes for its subject-matter the known facts of past events. But the "facts of history" are notoriously subject to interpretation, and "it is only in terms of ideas that the Middle Ages, the French Revolution, Christianity, can be understood historically."¹⁹ Moreover, all historical testimony is prejudicial and by its nature insusceptible of proof "In speaking of history . . . we have been assuming that there is such a thing as historical truth which is to be found in accordance with definite methods of historical search. . . ."²⁰ Certainly not all past events are preserved in our memories and records. There is no unambiguous common subject-matter of history; there are as many subject-matters as there are historians. The legend of history is whatever construction you put upon the events you believe to have occurred. The only distinction we can make between the legend of history and admitted myth is that a halo of factuality is attached to the legend of history. All higher significances lie beyond the distinction between them; and only on the plane of deliquescing identities need there be any line drawn. Evidence of the actual life and death of Prester John could affect only his possible heirs and assigns, and on this plane he would have no signi-

¹⁷ A. N. Whitehead, *The Concept of Nature*

¹⁸ Ibid.

¹⁹ Harold R. Smart, *The Logic of Science*

²⁰ Morris R. Cohen, *Reason and Nature*.

ficance beyond that of any multi-millionaire. History conceived as a series of chronological events is meaningless. The value of the legend of history lies in significant interpretation.

We have stated above that legends are irreducible to one legend; but this does not mean that they cannot be connected or referred to some more inclusive legend which is capable of correlating them and assigning to each of them its proper value. This is the purpose of the legend of philosophy, which we term *map for legend*. Without the legend of philosophy, all other legends are meaningless; each would exist apart in its own limbo. Philosophy is not a critic of any legend, except in so far as a legend presumes to represent the nature of reality and the meaning of experience. Philosophy cannot teach science how to proceed, or lend common experience a guide for action; it can and must serve as a rational background, a permanent reassurance, a chart to which all judgments can be referred. No philosophy can be worthy of the name unless it takes into account and interprets all legends; for obviously it is nonsense to negate any aspects of experience, which are the legends humanity has wrought with its blood and found inseparable from its existence.

According to the map for legend which we have here drawn, each legend is valid within its proper limits, and is otherwise absurd. The limits of a legend are set by its significance for humanity. Human significance we have defined as the most complete integration of all experience, which, although symbolic, approaches asymptotically the non-symbolic ultimate significance.

Ultimate significance is man's unknowable and unattainable goal; since he cannot abandon the fiction of his identity and remain man. Such fiction prescribes his knowledge, which is therefore wholly symbolic, and these symbols are rationally assembled and correlated into various legends. We must finally agree that all concepts, even that of ultimate significance or deity, are symbolic fictions, and human, since they, too, are manifested only in and through experience. That is to say,

knowledge of ultimate significance is confined to those things which are existent for man. And so we come to agree with Protagoras that "man is the measure of all things; of those things which exist, and of those things which have no existence." The legend of philosophy is merely the most inclusive cognitive aspect of man's inexorable quest for the measure of ultimate significance.

XI. CONCLUSIONS

We shall now sum up the main points of our argument in refutation of the metaphysics of the modern world-order, together with the outline of the new theory of reality which we would substitute.

The modern world-order is based on a dualism of reality: evidenced by subjective and objective qualities of experience, yet the criterion for bifurcation is nowhere apparent and such a dualism is untenable. Primary or objective qualities turn out to be merely those aspects of experience concerning which perceptions agree; secondary or subjective qualities, those aspects of experience susceptible to varying interpretations. The distinction between the two is one of value, not kind. The fallacy of bifurcating reality arises from a confusion of *reality* with *value*.

The examination of the objective world as though it were independent of perception does not yield anything independently *given*, only a series of meanings hypostatized into symbolic entities, in a certain order of inclusiveness. These symbolic entities are known to psychology as percepts and concepts.

This argument does not lead to a subjective idealism, inasmuch as the mind can no more exist without an object than the objective world can exist without a subject.

We therefore set up an hypothesis as to how the seemingly dualistic world of experience is abstracted from basic unity. Underlying all experience is the concept of discrete unity, the individual consciousness. This in turn presents a distortion

of all else as the world of experience, external to the self, or spatialized. Such a separation of the one from the many is relative and fictional, for all man's efforts as evidenced through cognition are toward a reintegration, even on the plane of common experience. The striving toward unity is, in its purest form, the essence of religion; yet it enters as the significant attribute into every activity.

The concept of time is itself an attempt at integration, supplying for common experience the background between unities, thus yielding identities and substituting for a radical discontinuity between unities. Time is, in effect, a denial of non-being. Motion is again an attempt at integration, since here identities communicate and patterns are continuous. In another way, non-being is denied.

The direction of time is merely a spatial orientation for the direction of the movement of identities. Past, present, and future (time-partitions) resolve themselves into methods of dealing with identities differing in value. Time-partitions are essentially partitions of knowledge. The present is the ground for the compromise between discreteness and significance, or between *prime phases* of basic unity necessary for the form of being and whatever meanings they will bear. The present is thus limited by spatial partitions. Outside this spatial limitation of the present, there is the past, which is whatever meanings are given a factual authenticity by belief, and the future, which is whatever meanings are denied such factual authenticity. Due to the limitations of man on the plane of discrete unity, together with his efforts to integrate experience, he partitions the eternal present to deal with *prime phases*, and to relieve himself of their insistence. Time-partitions are detours to integration, and therefore efforts toward significance.

Classification and cause-and-effect are further affirmations of continuity: classification, a method of integrating one identity with other identities; cause-and-effect, a method of relating into a sequence two identities. The possibility of the cause-

and-effect sequence is infinite; its limitation is arbitrarily imposed; for instance, in science *strict* causality arises because of the *strict* logic of the phraseology in which scientific laws are stated.

There is another order of hypostatizations, that of concepts detached from *prime phases*, the crystallization of universal meanings into entities. This is a necessity of reason, yet a hindrance to reason in the comprehension of further meanings. Thus *all* entities are fictional and relative, symbolically true in their proper order, false and absurd out of it. This relative nature of all knowledge indicates the necessity for a hierarchy of values. Fiction becomes simply the partial and symbolic representation of truth, approaching though never reaching absolute truth. The meaning of absolute truth is unequivocal. All aspects of experience are equally real, though not all equally valuable. This endows with supreme importance the proper evaluation of categories, and at once rids experience of the unhappy dichotomy of *kinds* of reality.

Now that the dualism of common experience has been untangled, the direction and some indication of the purpose of life become apparent. The continuance of the fiction of man's independent existence (discrete unity) is opposed to his inescapable effort to integrate experience, i.e. to merge with the infinite of which he is part. The result is a continual compromise: the establishment of an equilibrium between discreteness and significance (form and content). Of such equilibrium is art; and all constructs, even the world of matter, are artistic creations. The value of any construct or identity, i.e. its place in the hierarchy of values, is determined by the weight of significance it will bear.

This judgment of value is not left to reason, though reason can comprehend it. Identity inevitably attaches itself to the higher significance in preference to the lower; and thus is the final meaning of time in common experience: the persistence of the more significant identity, in comparison with the deliquescence of the less.

Legends are attempts to group the largest possible number of fictions into a single synthesis wherein these fictions are correlated in a rational manner. The limited symbolism of identities renders impossible their reduction to one legend; and there must be as many legends as there are organized readings of experience.

In particular it is important to distinguish between the legend of common experience and the legends of science, since the former is concerned with a judgment of values, whereas the legends of science purposely avoid the whole question of value in order to examine dispassionately the more discrete and abstract relations of experience. The purpose of the scientific legends is eventual usefulness to common experience.

The legend of history lies between the discreteness of the legends of science and the significance of the legend of common experience. History is either interpretation or an insignificant series of dates.

The attempt to reduce the legends of science to the legend of common experience would result in the annihilation of reason by prohibiting abstractions. On the other hand, the reduction of the legend of common experience to the legends of science would negate the whole question of human values, and would assign the supreme metaphysical category to matter. This latter attempt is the *maxima culpa* of the modern mind

The proper allocation of all legends is the exact business of philosophy, and we therefore term it *map for legend*. This means no less than the proper ordering of all human experience, since the total body of legends covers the cognitive phase of human endeavour

Knowledge cannot be ordered or evaluated except in immediate relation to the destiny of human life, which exhibits itself as the inexorable quest for ultimate significance, approachable asymptotically. Significance is manifest to man only in and through man, that is, through his experience.

We have tried to indicate that for man to follow his destiny,

he must be fired with the conviction that human values *are* significance and constitute the only values. Chaos, madness, and destruction lie in wait upon the present assumption that there are any other values.

This is the metaphysical position we maintain, and the critical attack we launch upon the modern world-order.

CHAPTER II

THE HISTORICAL BACKGROUND

1. COSMOLOGY AS EMPHASIS

The account of the modern cosmology, a system depending upon a certain explanation of experience rather than any other explanation, and depending upon the ascendancy of certain values rather than any other values, involves an examination of historical origins. Fully to comprehend the modern cosmology, it must be compared with previous cosmologies, and its origins sought in them.

A cosmology is original in the sense that what it takes over from its predecessors is drastically altered, its novelty consists in a radical reaction away from its immediate predecessor. A new cosmology does not arise spontaneously, or through the isolated genius of one man or a special group of men; nor is it in a strict sense a rebellion, for not too far behind it there is a general dissatisfaction, which first becomes articulate in certain exceptional individuals. Every cosmology is the inevitable development of a peculiar orientation, an emphasis on, because of a faith in, certain aspects of experience, to the subordination of all others. It begins with a *volte face* from the limitations of the old order, and, like all human organizations, it succeeds within its self-established limits and has a day and a flowering, and ends when the slighted aspects of experience burst the bonds of its authority. A new cosmology enjoys the whole-hearted faith of humanity, and continues for some while to prosper through this faith taken for granted, but later shrivels into a constrictive mould which delimits and harasses its quondam adherents, who are thus made receptive to a fresh order. As slowly the most importunate of the subordinated aspects of experience shape themselves into a new emphasis, another cosmology is nurtured.

The modern cosmology is a scientific cosmology, inasmuch

as its beliefs are ordered from the same empirical attitude as that from which natural science is derived. The modern cosmology has matured through a development parallel with the development of natural science which has been its prophet. Natural science is exclusively occupied with those aspects of experience having the greatest concurrence, and consequently seeming the most undeniably objective. The scientific methodology thus insists upon the discrimination of objectives; and hence forbids the making of judgments which by relating back to the subject might be appetitively coloured. Science as an investigation is purposely divorced from the subjective interests of the investigator. As we noted in Chapter I, this obsession with the objective characterizes the modern mind. The fact that it is a distinctly modern attitude becomes even clearer when it is remembered that in the ancient and mediaeval worlds science as a study was not divided from the rest of knowledge. All speculation, including speculation concerning the natural world, was included under philosophy; indeed, no separation between science and philosophy occurred until early in the seventeenth century.

But philosophy itself was not originally a separate division of knowledge. Natural science and metaphysics are both offspring of religion. When religion enjoys the full support of faith, as it does in its prime, it is not a special interest, restricted in the modern fashion, but rather embraces all aspects of life, both natural and supernatural. But when religion begins to lose its unquestioned authority and hardens into a formal and fixed dogma, both the rational background of faith, implicit in religion, and the extended development of such activities as healing, agriculture, warfare, fecundity, etc., with all other forms of magic, pass into the hands of laymen. To them, all they have inherited appears as one study, and no exclusive distinction is made between what is now philosophy and science, both consisting of speculation concerning a natural world to which man is not opposed. This change of agency represents for both philosophy and science a gain and a loss:

a gain, inasmuch as speculation, now free from the trammels of formal religion, is allowed to proliferate; a loss, inasmuch as less significance is imparted to the whole of experience, an integration which religion was able to give. When, as in the modern world, there is a further scissiparity, and science breaks off from philosophy, there is a further gain through the specialized development of knowledge and a further loss in significance coincident upon the confusion resulting from the undue categorization of experience.

II. THE HELLENIC WORLD-ORDER

With the Ionians a cosmology was already in progress; science and philosophy had been separated from religion but not from each other. Religion for the people of the historical Greek culture had long ceased to be a vital force, and had faded into a polite group of fables. The culture which produced minds like Thales, Anaximander, and Parmenides, cannot in any sense be called "early"; but indeed it is rather obvious that here we are dealing with ripe figures in an old and mature culture, with one not far from the summit of its achievement. The period from the birth of Thales to the death of Plato extended over less than three hundred years, and contained almost all the highest artistic attainments of Greek civilization proper. Yet so little is known about the development of the Greek mind before Thales, that it is impossible to trace the origin of the growth which reached its peak during those three centuries. We shall not deal with the assumed background, nor shall we attempt to explain it by reference to the ancient writings of the East. We confine ourselves in this chapter to Western thought, and Western thought stemmed from Greek philosophy. This is not to say that Ionian culture had had no roots in the Orient; but such origins are extraneous to our investigation. For our purposes we may consider it autochthonous.

The Greek world-order became explicit with the Ionian philosophers. These men were primarily metaphysicians, for

whom reason was not in opposition to nature; and who hoped to discover in the first principles of nature a unifying real substance and an explanation of all life, including man. Thales thought this prime substance to be water; Anaximander called it an unknown prime element to which water and all things could be reduced; Parmenides considered all things part of pure being; Heracleitus held that essential reality lay in flux. The attitude of these philosophers was essentially rational and non-mystical; that is to say, they believed that nature could be wholly accounted for in terms of reason. They took for granted that man and his reason had a central place in the scheme of nature. They reasoned from life to nature, holding that the universe was an organism, and inert matter something less than organism, in exact opposition to modern science which reasons from inert matter to organism, assuming that life is an accident of matter. The fact that the Ionians put faith exclusively in reason precluded them from a conscious search for the infinite. These men expressed the Greek norm, which, by its finite balance and symmetry, endowed humanity with a grandeur, even to the most ordinary habits of common life, although it inhibited infinite aspiration.

Pythagoras presented a departure from the main current of Greek thought. The Pythagoreans were primarily concerned with quantitative relation, and consequently with numbers and numerology, they held *relation* to be ultimate reality. Thus number, which had for them a mystical connotation, was responsible for a religious revival, with its later rituals and Dionysiac cults. Herein they departed from the cool rationalism of the Eleatics. The Pythagorean doctrine of numerical relation resembles the latest theories of modern physics, which describe the universe only in quantitative terms. Even the mystic enthusiasm of the Pythagoreans for numbers has its modern parallel in the utterances of Sir James Jeans, who becomes one with Pythagoras when he states that ultimate reality is pure mathematics and that number is all. It is in their ethics that the Pythagoreans joined the main body of Greek thought;

for their emphasis on mathematics led them to the deduction that human life should contain balance and harmony in all its phases. The proper aim and end of humanity was for them, as well as for the Eleatics, a balanced and harmonious life.

In contrast to the mysticism of the Pythagoreans was the mechanistic philosophy of Democritus, who thus also presented somewhat of a departure from the intellectual direction of the times. The atomic theory of Democritus has excited much contemporary interest because it superficially resembles modern atomic theory. Yet Democritus was not a scientist but a philosopher; his atomism was not an investigation into the nature of the physical world *per se*, but rather an attempt at a rational explanation of life. He constructed a self-consistent order on the *a priori* assumption that the world was made up of underived, unchangeable, irrefrangible atoms, and the most nimble and fiery, called the soul-atoms, were ascribed to living bodies. There were here the beginnings of a mechanism which comes close, in appearance, to modern mechanism. The important distinction is that Democritus conceived his atoms as endowed with motion, which saved him the embarrassment of having to account for life. Nevertheless, Democritus' system is, like modern mechanism, a block universe with a dualism of primary and secondary qualities, and a system which, if logically followed through in its ethical implications, would result in the same conclusion that the modern age has accepted—a deterministic, "alien world." Why then did this not so occur? Simply because neither Democritus nor his contemporaries could accept the logical consequence of any system which did not accord to reason a central place. Faith in man and his reason lay at the roots of the Greek mind, and this faith would have been impugned by a strict pursuance of the mechanistic argument. The modern paradox of reason doubting the ability of man to reason, was substituted by the Greek mind for a determination to hold on to faith in reason, even though such loyalty in consideration of the position of mechanism was illogical. This illogical loyalty is illustrated

by an examination of the fragmentary ethics attributed to Democritus, and particularly by the elaborated ethics of his follower, Epicurus, who took over Democritus' philosophy without making any appreciable change. This ethic seemed to be the logical corollary of a belief in a mechanistic world; since in such a world there appeared to be a sanction, that of the pleasure and pain of the individual. This sounds very plausible, and no doubt Epicurus believed that he had logically worked out such a mechanistic ethic. But it must be pointed out that pleasure and pain are neither absolutes, nor equals, nor opposites,¹ inasmuch as pain is often pleasurable and pleasure painful. Epicurus succeeded in setting forth an admirable morality, and managed to hold on to his faith in man and reason, but only by appealing to an extraneous scale of values for which his mechanism yielded no basis. Pleasure and pain may be defined only by reference to a final cause or purpose; and mechanism knows no such purpose. How, for instance, would Epicurus have evaluated the self-inflicted tortures of St. Simeon Stylites by strict reference to pleasure and pain?

That the Greek world-order was fundamentally rational is a generalization that has been widely accepted. Certainly the Greeks believed themselves to be fundamentally rational; and their own opinion of themselves in this regard has gone unchallenged. But perhaps this opinion should receive closer examination. We have indicated that Pythagoras, starting from a preoccupation with mathematics and its mystical connotations, avoided every ethic except the humanistic, though he might have made a number of other ethical deductions from his metaphysic. We have also shown that Epicurus, starting with a position opposite in the extreme from that of Pythagoras, also refused to permit logic to carry him away from his essentially humanistic predilections. Surely in neither of these cases was there what can be called a strictly logical

¹ The opposite of pleasure is non-pleasure—not pain. Epicurus should have been dealing in four terms, instead of two.

procedure. Reason, in the Greek mind, stood for faith in the essential rightness of rational man. This faith often led to an illogical procedure in rationalization; which yet led to a result that seems more reasonable than a closer following of logic. The modern world, therefore, may be said to be more strictly logical than the Greek world; though the effect of reason impugning the ability of reason to arrive at any truth is an absurd irrational. This might indicate that reason, whenever it attempts through logic to operate without the assumption of a basic faith in something other than reason (and which would still demand faith in the efficacy of reason), ends in a nihilistic and meaningless scepticism. But this argument only hints at a very critical point which is discussed at greater length in Chapter IV

The Greek mind was all of a piece: an innate conviction that the good life consisted of the fullest flowering of all man's natural impulses, balanced by and ordered from reason as an ultimate. This adoration of the natural man *in excelsis* has no parallel in the Western world. But the virtue of such faith in the rationality of man as an ultimate had its own vicious limitation, in that such an ultimate is too finite ever to be upheld as an object of worship, since reason is merely the method by which the blind appetite toward the infinite approximates that unknowable infinite. The limitation of the Greek cosmology lay in the finiteness of its ultimate object of desire.

Inexorable logic, brought to bear by the Sophists from the premise of the absoluteness of reason, found its *reductio ad absurdum* in a subjectivism and in a philosophical scepticism; for if reason be the criterion of itself, one man's reason is always as valid as another's, and no agreement as to what is true can be possible. The Sophists were very much like modern intellectuals in that they permitted their logic to carry them to whatever conclusion it must, for they steadily refused to question the premises on which such logic was based. There is to-day the same subjectivism posited in ethics in default of

a criterion of values, and a corresponding result in intellectual scepticism, with the complete bankruptcy of the critical faculty; although both Sophist and modern intended a coldly objective critique.

Socrates came in time to save sanity for the Greek world and defeated Sophistry by forcing it to define its terms. He thus proved that reason itself, as well as a rational conduct of life, are dependent upon hard and fast, and as nearly as possible unambiguous, crystallizations of meanings, i.e. concepts generally agreed upon. Thus Socrates precipitated the question of a criterion of values, the question of what is truth. Yet his purpose was practical, and he did not explain how he arrived at his criterion, nor derive it from a metaphysic. This task was left to his disciple, Plato. Socrates remains the martyr of the Greek allegiance to faith in man, and the saviour of the Greek ideal—the only symbolic figure of a man crucified for the cause of common sense.

The rationalization of the Greek ideal, and a criterion of truth, were given in Plato's metaphysical system. So grand is this synthesis, that no philosophy since has been able to avoid its influence entirely; for, as Whitehead has remarked, "the European philosophical tradition . . . consists of a series of footnotes to Plato."²

The search for what is truth led Plato to the search for what is real. In sense perception he could find nothing permanent, no particular which did not refer to some universal. Yet in sense perception no universal was apparent; but such universals or concepts are of the very essence of the function of reason. Concepts seemed to Plato intuitive, and all concretions but their imperfect and shifting reflections. These universals, or Ideas, he believed must exist somehow independent, as archtypes, and constitute the basic reality. Here, of course, he had an ontological justification for a criterion of truth, and at the same time a warrant for the enthronement of reason, as being alone capable of coping with reality and as against sense

² *Process and Reality*.

perception which deals only in appearance. Thus to Plato no perceptual particular was absolutely real, since none was absolutely true to a universal. But neither was a particular ever observed to be absolutely good or absolutely beautiful, but might partake of absolute goodness or absolute beauty. Consequently, Plato reasoned, the real equals the true and the true equals the good and the beautiful.

The significance of such a doctrine is easily understood in its relation to previous Greek thought, since it included and reconciled all seemingly diverse speculation: unity with plurality, appearance with reality, flux with permanence. The value of Plato's metaphysic to the prevailing faith in man as a rational animal also becomes evident. The universe is a rational universe, with a final cause or purpose, comprehensible by man's reason; it is a harmonious ordered whole, with only the essence of matter as irrational; and matter as it becomes known partakes of the ultimate, in so far as it reflects, though imperfectly, the reasonable element, which is identified by Plato with the ethical and the aesthetic. The greatness of Plato lay in his ability to rationalize prior fragmentary thought and give utterance to the unexpressed faith of the Greek world in the essential rightness of rational man. His blindness was the blindness of his times—a failure to go beyond and question the ground on which a faith in reason was founded. Thus in Plato, as in the Greek world generally, there was a finiteness which limited that world, at the same time that it intensified its splendour. Plato seems more to mark the summit of a culture than to be an influence upon it, and he might be said himself to be one of his own Ideas, which the remainder of the Greek world imperfectly foreshadowed.

The Platonic doctrine of Ideas, interpreted by the Classic mind as investing matter with spiritual value, was inversely interpreted by the neo-Platonists and Christian dogmatists as good reason to condemn the material world (mere appearance), and to concentrate on the spiritual world (the real). The first thousand years of Christianity saw Platonism inter-

preted as the rationalization of the religion of Christ; because Christianity was predisposed to dismiss the material world as an insignificant shadow of divine essence.

After the twelfth century the influence of Plato was subordinated to that of Aristotle, and Platonism was never thereafter a dominant force. Yet it is absurd to suppose that the attitude of mind represented by Plato will ever disappear, no matter how completely it may seem to have been abandoned by any current divagation. This attitude, loosely referred to as idealistic, is the attitude which affirms the essential rightness of rational man, along with the conviction that this belief somehow could be logically demonstrated. In short, it is an attitude which states that what is eternal is inevitably identified with what is most significant and that this truth is demonstrable by reason. Thus whenever you hear an appeal to reason as a final appeal, you are listening to the echo of an eternal and essentially human prejudice, to which Plato's name has been attached. Yet it can hardly be maintained that Greek rationalism is any but a subdominant influence now.

The Platonic metaphysic was adapted by Aristotle to suit his own predilections in favour of the here-now. He maintained Plato's prejudice for a rational universe, and his same insistence on final causation; but the Real for Aristotle was not reflected in the world of matter but immanent; and form always tending toward a perfection, was imposed from within rather than from without. He was predisposed to accord more value to the perceptual than was Plato; and hence his investigation of the natural world and his interest in evolution. Yet he was in no sense a modern scientist; for modern science distrusts his method, which was concerned with final causation rather than efficient causation. Aristotle agreed with Plato that universals were intuitively *given* and Real; and this precluded him both from a sceptical questioning of premises, and from bestowing his sanction on induction. For him induction would have constituted a sacrilege against premises transcendently imposed on the mind; and he gave induction scant notice

except where it could be used to defend premises already held.

So Aristotle made the deductive method authoritative. He organized the system of deductive logic; he invented the syllogism. Through this method of reasoning from universals to particulars, he undertook the task of ordering all knowledge, and thereby affected the channels of thought ever since; so that the sharp classifications of knowledge, as they are known to-day, have an objective and undue hardness. There is little question that the great advance of the physical sciences was due to a methodology which necessitates exact definitions. This exactness was a direct inheritance from Aristotle, and accounts for the insistence in the Western world on law and order, as exemplified by Roman law and its long success, and by the organization of the Roman Catholic Church with its temporal authority

Despite the fact that Aristotle was certainly one of the authors of the modern intelligence, we question whether the ill effects of his system of thought have been sufficiently emphasized, and whether the mischief wrought by his influence has not been almost disastrous. In Aristotle's day the principal intellectual need was for a viable division of knowledge by hard and fast definitions—workable generalizations. These he supplied. By the introduction of categories he brought order into every field of speculation with which the world was then familiar. He organized all knowledge, and assigned every fact its place; by so doing he indicated a method by which facts have been henceforth grouped. This sort of division appeared to Aristotle to be obviously inherent in the nature of things, and not in any sense arbitrarily imposed; unfortunately Aristotle's judgment here has largely obtained ever since. Certainly no one can question the necessity for the kind of classification which Aristotle initiated; what is questionable is the authority which such classification attains. When, in the Renaissance, men rebelled against what were crystallized concepts, the rebellion itself was followed by a strict adherence

to Aristotelian habits of mind, inasmuch as men like Galileo, Newton, and Bacon claimed for their hard stubborn facts the same clear-cut and obdurate objectivity that the Aristotelians had insisted upon for the concepts they were defending, and so the insurgents perpetuated the very habit they were so set against. It is true that the defining of subject-matter cannot be labelled Aristotelian since it is a universal rational method; indeed, the intellect fails to operate in the absence of this process. Nevertheless, there is another essentially rational process, and toward the subjugation of this Aristotle's weight has been brought to bear: this process is the breaking up of old concepts, the dissociation of ideas, and the exposition of their relative or fictional nature, once they have outlived their usefulness and become obstacles to further thought. It may be said that the intellect fails to operate in the absence of *this* process, also. We cannot insist too strongly upon the fact that the effect of Aristotle's influence has been to overlook and slight the need for this analysis and dissolution of concepts, for whenever the analytic process has operated, it has secured a Pyrrhic victory in that each insurgence against old concepts has been immediately succeeded by new dogmatism and stubborn refusal to question the new concepts. The modern world is still suffering from the rigidity which Aristotle imposed on all concepts, suffering because of old concepts which have outlived their usefulness and yet clutter up the intellectual landscape. In natural science the rigid definition of subject-matter has, in the past, been effective, because of the fact that its data are by their nature susceptible to agreement. In common experience and in the fiasco of the social sciences, however, the refusal to dissociate concepts has amounted to intellectual regression and chaos. Even in the field of the physical sciences the sanctity of concepts had estopped further progress. Yet modern physics has taken a revolutionary turn in recent years and has begun to break up most of the concepts which had been held inviolate. It is a curious fact that physics, the science in which rigid concepts have been most fruitful,

should have taken the lead in their dissolution.³ The tremendous contribution of modern physics to culture will be just this destruction of old definitions which were seemingly final.

³ We may remark here that some modern physicists, at least, have swung round to a position which is best described as that of idealism. And none claims that physics has discovered reality. The most that is posited is that physics deals in metrical relations of an unknown reality, a "schedule of pointer readings." "'Surely, then, that mental and spiritual nature of ourselves, known in our minds by an intimate contact transcending the methods of physics, supplies just that interpretation of the symbols which science is admittedly unable to give.' The point is important, and Professor Eddington emphasizes it by means of another line of argument. In the case of the schedule of pointer readings which is our brain, we know that it is attached to a spiritual background which is our consciousness. Hence we may not unreasonably conclude of other schedules of pointer readings that the background to which they too are attached is of the same stuff as spirit and the same stuff as consciousness. In other words, our own spiritual experience, which is the one thing we know otherwise than as a schedule of pointer readings, gives us a clue to the nature of that underlying substratum to which science never penetrates—that is to say, to the inner reality of the universe. In so far as we are justified in conceiving at all of that which we cannot know, we must conceive it after the likeness of that experience. Hence reality is fundamentally spiritual." So far C. E. M. Joad, in *Philosophical Aspects of Modern Science*, who also quotes Eddington, from *Science and the Unseen World*, as follows, "Mind is the first and most direct thing in our experience, all else is remote inference."

In sharp contrast to this are the cheerful certitudes of the most eminent exponents of other sciences, who take for granted that modern physics *has* discovered a reality which is entirely independent of all human values. Kohler, in *Gestalt Psychology*, affords a pathetic example of this common error when he cheerfully accepts the findings of physics as the underlying reality and cause of the mental. "It was a great step when men began to ask how seeing and feeling and hearing occur, and it was a revolution when they found that colours and noises and smells, etc., were merely (*sic*) products of some of the influences exerted on man by his surroundings. . . Finally even the 'primary qualities' of naive realism were assimilated to the secondary as subjective. The form, weight, and movements of the objects of immediate experience were treated as colours and sounds, i.e. as functions of the experiencing organism, as end results of its complicated processes." Practically all the sciences slavishly imitate modern physics, and admire it for its successful arrival at certainties which the physicists themselves no longer lay claim to.

So far, this major intellectual advance has not been communicated to the general intelligence, and its far-reaching and revolutionary future effects in common experience have not been foreseen or even now understood. But this point is argued in detail in Chapter III.

For the Greek world, Aristotle came to mark the culmination of a rationalism, at last grown perfectly articulate, when the culture which had given life to that rationalism was almost at an end. It must not be supposed that philosophers can independently manufacture a culture, or succeed in destroying one by their own efforts. They are the marshallers of culture, and give it voice, and to some extent direct its course, but they depend to a greater extent than is ordinarily supposed on the unexpressed beliefs of the age in which they live. Thus all Greek philosophers, no matter what their divergence of opinion on other matters, agreed that rational man occupied an exalted place and that reason was the supreme element. This accord conformed to the Greek cosmos which was harmonious, finite, and material. Materialism thus conceived concerns itself with materials as such; the interest is exclusively sensuous, a far cry from what is commonly termed materialism to-day, which is an obsession with the abstract possession of material things rather than with materials for their own sake. The world of the Hellene was finite: he had no curiosity about what lay outside experience; he was confident that he had explored the limits of the earth, and that there was nothing worth probing in past history; time was confined to the time he knew, starting in the past with myths he did not care to question, and continuing into a future about which he had no curiosity, believing it to be but a prolongation of the present. His world was a familiar world; his gods lived on a mountain-top in Thessaly and were beset by mortal vicissitudes; his Zeus was neither omnipresent nor omniscient; indeed, the Hellene gave no expression to any form of infinite aspiration. Although a naturalistic reading of Greek history might lead to the conclusion that Greece was in a constant state of turmoil and

chaos, continually disrupted by political feuds and internecine wars, the Greek ideal nevertheless consisted of static order and balance. Again and again, in architecture, in sculpture, and in the drama, as well as in philosophy, the Greek spirit is seen expressing the three ideals: materialism, finity, and harmony.

Proportionate and well-disposed as this world-order must appear to reason, it is yet true that by its suppression of the most obvious finite quality of man—his tragic craving for the infinite—it brought about its own destruction. Greek religion did not furnish satisfaction for this craving any more than did philosophy; nor did either supply a popular morality. Therefore mysticism and morality ran wild. The moral man, unable to associate virtue with beauty, after the esoteric fashion of Plato, held to a love of beauty, but allowed virtue to disintegrate to the point where "Greek" became synonymous with "untrustworthy." Starved worship turned frenziedly to Eleusinian mysteries, Dionysiac cults, and similar rites, until rationalism was finally swallowed up by the chthonic deities.

III. THE CHRISTIAN WORLD-ORDER

During the half-century dating from the birth of Aristotle, the undefined but actual nationality of Greece was beginning to disintegrate, but the Greek idea had just begun to condition civilization. Yet this idea, which Alexander was active in disseminating, had suffered a change from the essential Hellenic culture; it was an idea which had lost its pristine faith in rationality and had become impatient with Aristotle's *eudemonia* and was fermenting with religious emotion. Indeed, the known world was avid of the infinite. The strain of the attempt to live by a cold perfectionism proved too much at last; and under the adversities of a chaotic political condition the way-faring man lost faith in the ability of his own reason to lead him aright, and so cast about for some divine authority that he could follow blindly. This resurgence of mysticism in the masses was evidenced by the orgiastic cults. The intellectuals, repelled by the crude emotionalism of this kind of approach to

religion, sought refuge in the dignity of stoical doctrine, a religion still vested in reason.

It is clear that long before the appearance of Jesus the world was waiting for a leader capable of regimenting the disparate though already enlisted religious urgings. It was proper that a spiritual leader should have appeared in Judea, where monotheism had had so long a history and where successive prophets had previously arisen for the guidance of the Jews. What made Jesus so generally acceptable was the fact that in Him stoicism and emotionalism were combined with a peculiar dramatic power. The story of His life and death reinforced the cogent symbolism of His doctrine and caused it to appeal to both intellectual and common man. The legend of the saviour-hero who is crucified for His benefits to humanity, repeated so significantly in history, is all the more potent in this instance, in that the Christ offered not a material good but spiritual salvation. In this salvation, distinction was not made according to birth, caste, or learning, but the infinite worth of every human soul was stressed.

How nicely the teaching of the Gospels was made to accord with the metaphysics of Plato was already evidenced in John, but especially in the letters of Paul, who actually formulated the religion of Christ, and who largely dictated its tenets. Consciously or unconsciously, Paul, who had studied Greek philosophy before his conversion, utilized the powerful Platonic metaphysic in the service of the faith in Jesus Christ and set the pattern of thought, later elaborated, which was to hold for a thousand years.

The attempt to reconcile the new mysticism with the long-established rationalism was not only exemplified by Paul and the Gnostics, but also by men who were not Christians, like Philo and Plotinus. It is plain that Christianity was not the sudden conversion of men to a new way of life through a faith in Jesus Christ, implying a total change of heart and mind; it did not spring complete into being, but was merely one of the channels, and the most important, through which mysticism

gushed forth from its long pent-up reservoirs. The Greeks were unconscious of the irrational springs of their rationalism, of an undemonstrable faith which even Plato succeeded only in driving deeper—temporarily. The Christians furnished their emotionalism with a rational basis. That Christianity survived the worship of Mithras, the worship of Rhea Cybele, and other mystic cults, was because it was able to reconcile itself with Greek idealism. It is fortunate for Christianity that it effected this union with Platonism, and enlisted in this service its own most powerful intellects; for a faith is ephemeral that cannot be rationally defended. And conversely, reason is not possible except as a defence, and so must have a faith to defend, a faith radically undemonstrable. The common opposition of faith to reason, with the implied judgment that faith needs no justification, is untenable. As Morris R. Cohen has observed, "The pragmatic glorification of belief contains the deep poison of scepticism as to what really exists, and this like a Nessus shirt will destroy any religious belief that puts it on."⁴ That the Christians understood the imperative necessity of such rationalization was shown by Christian philosophy which, until the time of Roscelin, concerned itself with little else, utilizing for its purposes when necessary the doctrines of pagans.

This annexation of non-Christian philosophy was most notorious in neo-Platonism, particularly as set forth by Plotinus. The neo-Platonic tradition was continued by Augustine, whose importance did not lie in any addition to Christian theology but rather in the accent and colouring he gave to the Christian attitude toward life. Augustine emphasized the contrast between the City of God and life on earth, much to the contumely of the latter. The business of living became in Augustine a tedious period to be endured, with hope constantly fixed on the world beyond. The natural man, so profoundly venerated in the Greek world, was here belittled, and all his faculties not commandeered in the service of holy religion were condemned.

⁴ *Reason and Nature*

That period from the fall of Rome to the coronation of Charlemagne as Emperor of the Holy Roman Empire, is known rather myopically as the Dark Ages. This period is considered as though it saw humanity at such a low ebb that life was unbearable. Certainly from the viewpoint of the modern this is true; the common life of that time lacked all those things which seem to the modern to make life significant. There was no concession to the senses; there was none of what are deemed necessary comforts. The Roman roads and aqueducts were allowed to fall into disuse and ruin. There was little secular learning, there was no science and no art except what served the Church. In short, natural man considered as an end was entirely forgotten. From Aristotle's viewpoint this would have been the nadir of *eudemonia*. But has it been sufficiently understood that the men of the Dark Ages lived a more integrated life than either Greek or modern, with religion as a force conditioning their every action? The Church as the representative on earth of divine rule was the arbiter of all religious and intellectual activities, the authority in all temporal matters, the first and last court of appeal. For a while the common man had a tangible symbol of infinite truth, and he needed to seek no further. The very human need which the Greeks overlooked in their emphasis on humanity—the infinite aspiration of humanity—came nearer to fulfilment here than it ever has before or since in the history of the West. This prime satisfaction is so foreign to the modern world that it cannot be appraised at its full value, though it may be surreptitiously envied. There is much to be said for the attitude of an age which regarded avarice and pride as vices, qualities which to-day, under euphemistic terms, are admirable virtues.

But the pre-eminent quality of mediaeval man was that he was willing to live his life or lose it in the cause of an ideal. When this heroic attitude is communicated to a whole people, it always imbues them with a full sense of life and a tragic ecstasy; and this is as near to happiness as human beings come.

It is probably safe to say that life was at least as happy in the Dark Ages as it is now; although classic or modern man would have found it unbearable. Every age is a "dark" age from the cultural viewpoint of another. To eighth-century man the modern world would indeed be dark with the light of God's grace extinguished, and all other enlightenment would be a dim substitute.

Yet the intellect, always restless, was not content with a rationalization of faith *per se*, but attempted to go further and rationalize all things, both natural and supernatural, in the light of the sacrosanct premises of the Church. The forthright acceptance of these premises left the mediaeval thinkers no recourse from deductive logic, since all particular phenomena had to be deduced from the transcendent authority of universals, according to the principles of systematic inference. This is scholasticism. The schoolmen have been ludicrously underrated by contemporary critics. We are called on to believe that men like Anselm, Duns Scotus, Abelard, and Thomas Aquinas were little more than talented but uninformed amateurs of thought, quite precocious for their times, and who might have made some important (modern!) contributions had they only known the true scientific method. But, strange to say, this is comparable to the attitude the Middle Ages assumed toward classic philosophers! There is no better time than the present to point out that the scholastics were superior in some ways as truly as the moderns are in others. As to the limitations imposed on their speculations by the stringency of their religious beliefs, surely the modern age is in a like predicament; for, while to transgress the assumptions of science is not an affair of burning at the stake, it is still enough to put the transgressor entirely beyond the pale of serious consideration, or indeed of any notice at all. In the light of the brilliant success of the physical sciences, it is assumed that all the ideas of the scholastics have been proven fallacious; yet such is not the case. Modern man has simply abandoned one approach to natural knowledge, in favour of another approach, with no interest

knowing whether the old approach could have any value.

The incisive reasoning brought to bear by the scholastics on every subject permitted by the Church, and sometimes on those forbidden, was certain to have its end in the questioning of Platonic doctrine which was the vertebrae of the Church: the reality of universals. This was an end which the scholastics could not themselves have foreseen. Roscelin anteceded the main attack of nominalism on the reality of universals by about two hundred years; but meanwhile Platonic realism, and later Aristotelian realism, continued to dominate scholastic thought.

It must not be supposed that the acceptance of religion had been carried over unchanged from early Christianity into the later Middle Ages. The authority of the Church during its first nine hundred years was imposed from without, it is true, but this authority was a reflection of an inner impulsion, and there was no conflict between mysticism and theology. But gradually man became dissatisfied because his spirituality was delimited by the Christian interpretation of the Platonic divine essence. Spirituality will not be held down to finity for long, and the effect of a finite object of worship, even though it be an invisible god in a remote paradise, is unsatisfying and a little vulgar. As Christianity proceeded, its cosmogony became more and more familiar and commonplace. The falling off of the spiritual allegiance to the Church is measured by the gradual loss of its temporal authority, until in the thirteenth century we find the Emperor Frederick II openly defying its excommunication.

As the power of the Church diminished, the schoolmen desperately tried to demonstrate the rational basis for the dogma of Christianity as proclaimed by the Church. The newly recovered Aristotle was utilized by the rationalists to stem the tide of intellectual revolt, already implicit in the logic of other scholastics. Of these rationalists, Thomas Aquinas was the most brilliant and comprehensive, and may be compared with his exemplar, Aristotle, in that each summed

up and explicated a world-order. Each was trying to state the final rationalization of an order; yet each succeeded in bringing that order to an end by forcing its emphasis to an apogee. Both Aquinas and Aristotle pointed to the future, and each fixed the definite pattern for his own system: Aristotle, for Greek rationalism; Aquinas, for Catholicism. St. Thomas Aquinas remains to-day the authorized spokesman for the theology of the Roman Catholic Church. The logic of the scholastics had brought them to a point where they were beginning to doubt certain theological doctrines. Aquinas, a naturally devout man, anxious to keep faith in the Church inviolable, and yet eager to permit the free exercise of reason, finally solved the dilemma by dividing theology into *revealed* theology and *natural* theology. The former was to be accepted on faith alone; the latter turned over to free speculation. By so doing, he unconsciously admitted an inherent weakness in the Church, inasmuch as a faith which did not permit itself to be explained was no longer a triumphant faith but an obscurantism. On the side of *natural* theology or philosophy, Aquinas followed his master, Aristotle, in holding that universals were immanent in particulars, and in this sense alone had reality. With this doctrine Aquinas compromised the autocracy of the Church with an unintentional endorsement of empiricism, and so led to a questioning of the absoluteness of abstract ideas in the light of what were called the "brute facts" of nature.

From reasoning that particular objects constitute ultimate reality though they express universals, was but a step to the generalization that particulars alone are real, and that universals have no reality in the objective world, but are merely concepts or names, employed by the mind to classify objects for purposes of reflection or discourse. William of Occam was the famous champion of this doctrine of nominalism. In nominalism the Church rightly sensed a virus which might destroy its authenticity as the voice of God on earth, and a doctrine subversive to all vested authority whatsoever, since it would

throw man back on his own personal worship and his own personal judgment (as afterwards happened in the Protestant Reformation). The struggle between nominalism and realism was no mere wordy battle conducted by opposing dialecticians, of interest only to historians of thought, but a most fundamental and important question which remains unresolved to-day. In nominalism man has got hold of something he cannot live with and cannot live without. Forbidden the right to question the inflexibility of universals, the privilege of breaking up concepts, he would have no science and no new development of thought. It is equally true that nominalism lent its sanction to empirical research in fields which otherwise would never have been uncovered. In this way, nominalism has been a liberating influence; yet nominalism seems to negate the authority of reason and indeed the possibility of arriving at any objective truth. If there is no objective reality to universals, then certainly there can be no conceptual thinking which is indubitably and unconditionally acceptable to more than one person; and consequently humanity is forever deprived of any objective criterion of values; and again reason is thrown back upon the position of Sophistry.

The conflict must be resolved by a belief in the efficacy of reason to approach truth, at the same time leaving the way open for the destruction of the very concepts by means of which truth was approached. Our own position in this regard is briefly as follows. In so far as we deny the ultimate reality and absoluteness of concepts, we are nominalists; although we reject the setting up of particulars as being in any sense more real than concepts, since both partake of the same reality but belong to different categories of value. In so far as we admit that on the plane of experience universals have exactly the same reality as particulars, and in so far as we claim an objectivity for both, we are realists. We therefore maintain that reason can asymptotically approach ultimate truth, and is effective and valid, yet not absolute in the sense that it can deal in ultimates. It is this very relative quality of reason which

enables reason to abandon concepts in favour of other and more inclusive concepts without impugning its own validity. This position is stated fully in Chapter IV.

In secular affairs mediaeval life was an organic hierarchy, comparable in some ways to that of the Church, reflecting the rigidity of Platonic realism. The underlying theory of mediaeval feudalism was a tenure of rights and titles, eventually held in fee from God. Feudalism, of course, is not peculiar to the Middle Ages, but is a form which society has taken time and again in the absence of strong central authority and protection.

The institution of chivalry is, however, a peculiarity of mediaeval European feudalism. Woman under Christian rule met with indifference and even contempt. From St. Paul onward, extreme sexual asceticism was stressed by every Church Father. This is further illustrated by the worship of the Virgin, the institution of nunneries, and the celibacy of the clergy. The Church rightly identified sex idealization with the earth gods and the glorification of natural man, against which it continued to hold an unflinching prohibition. The sexual life remains an irrational in Christian philosophy; and marriage, although a sacrament, is admittedly a recalcitrant compromise. Thus sexual love was one of the most insistent and least catered to of all man's subordinated aspects, under the Christian cosmology. This impulse demanded some expression of its significance, and, by an elaborate circumvention of what was forbidden by the Church, set up a ritual of its own, which was chivalry. The *élan* of chivalry was the adoration of women; and, although very much embroidered with spectacular feats of arms and legends of heroes, chivalry still centred around service rendered to women. The ennoblement of sexual love, by seeming to simulate virgin-worship, was enabled to hide its altogether different intent, and pass unmolested by the Church, and at the same time to check with the moral conscience of the age. The fact that chivalry was a rebellion against essential Christian doctrine on behalf of subordinated natural man is not to be forgotten in its elaborate romanticism of

sexuality, or in the fact that one of the effects of making woman an object of worship was to defeat naive sexual desire.

Another point of dissimilarity between the feudalism of the Middle Ages and that of other times was the relation between vassal and overlord. Inasmuch as the theory was that the sovereign held his fief from God, the consideration was a payment not of specie but of loyalty and service; and this idea was carried down through the feudal system to the lowliest serf. The payment in service rather than in an abstract medium of exchange resolved the contract into a close personal relationship; the overlord felt a responsibility to some extent for the welfare of his vassals; and so there tended to be a just equipoise between privilege and obligation, a fact often forgotten in condemnations of the feudal system. To-day the stockholder of a corporation stands in no direct human relation to the man, for instance, who is, in foreign lands, raising raw products which the machines of the industry will eventually convert; and feels no responsibility whatsoever for his welfare. Nor can the stockholder be accused of hard-heartedness or thoughtlessness; the abstraction is too great, the connection too remote, the process too intellectualized. This illustrates why, in the Middle Ages, the serf could feel so much more protected than he does now when he is allowed political freedom but bound to his economic tenure. When the personal responsibility and personal contact of the overlords with their vassals ceased, due to the enlargement of feudal domains, free towns arose in rebellion against a contract become one-sided. The free towns, however, continued the traditions of feudalism in respect to the dignities of special trades. In the guild system there was the realistic control of the production of goods by the limitation of materials and of artisans to demand, a control which to-day is wildly sought. In the conducting of business the Middle Ages had one tremendous advantage over the modern world; no mystic consideration of inert matter could obscure practical problems, since mysticism was directed elsewhere. There was no faith in progress by production,

salvation by multiplication of manufactured goods. To one who looks for efficient business organization, the test of which is purely pragmatic, the guilds offer a first-rate example. Many of these guilds are still in existence; witness the butchers' guild of Limoges, which in 1930 celebrated its thousandth anniversary! If, however, the mediaeval attitude toward practical affairs would seem to delimit accomplishment by this prosaic colouring, it is necessary to notice the kind of endeavour to which they thought it worth while to devote their energies. The mere mention of the cathedrals, which were not built by magic, is enough to make this point.

Before we continue to discuss the course of mediaeval thought, which was fermenting in the thirteenth century, we must stop to consider just how mediaeval man regarded the world. The mediaeval cosmology was characterized by a disdain of the material world in favour of the infinite; the earth and all earthly things were shadowy wraiths bearing a moral connotation of contumely. What definitely existed were heaven in all its glittering array and hell with its tongues of flame. The Christian heaven and hell were specific places in time and space, completely explained in all details. And on earth the heavenly order was reflected by the Church with the same degree of splendour. The past for mediaeval man started with the year of salvation; the present was a tedious vigil while awaiting future rewards or punishments; and all preoccupation with earthly life was directed toward the future wherein lay all purpose. This was the essential emphasis of the Christian cosmology, accounting for its triumphs and its failures.

To understand the dissolution of this world-order, it must be borne in mind that its inception was a revolution against the failure of the classic world to include an aspiration toward infinity. During its first thousand years, Christianity supplied this need; but with the formalization of its dogma, its objects of worship became too familiar and finite to satisfy the craving for infinity for which they were originally created. At the same time, the rationalizing of the hardening dogma became

more and more difficult; first, because it had lost its rational integrity, and secondly, because it took no account of some of the most importunate demands of the human being. We have tried to indicate that the decline of the Christian cosmology was evidenced in the common life of the times, in the Church, as well as more articulately in the apologists for this order. Curiously, its greatest successes were in logic, in architecture, and in the conduct of the daily affairs of life, because these things were subordinated to a purpose beyond them, even though that purpose itself finally fell short of proper remoteness, and necessarily excluded the *eudemoma* of Aristotle. It is easy to see how this hard and brittle world, so sternly demanding sacrifice to an idea from which all vitality had departed, and which reason was failing to bolster, yet which none the less continued proudly to ignore earthly interests, was proceeding blindly to a death at the hands of the champions of empiricism in the Renaissance.

IV. THE MODERN WORLD-ORDER

It is useless to attempt to date exactly the beginning of the modern world-order, for, like the Hellenic and the Christian, the modern order can be segregated in its various manifestations only as an abstract consideration; this means that chronologically one world-order is not totally exclusive of another. The rise of the new is contemporary with the decline of the old, and none ever swings entirely free; although each at its apogee seems exclusive. It would be foolish to state that the thirteenth century, which was in some ways the flower of mediaevalism, was the inception of the scientific cosmology and the end of the mediaeval; yet this century did contain the first general susceptibilities which made it inevitable that the scientific cosmology should come about.

When Aristotelianism displaced Platonism in scholastic thought, when nominalism successfully challenged realism, when theology was partitioned off as a hopeless irrational, it was evident that the mind of man was turning toward a

new emphasis, an emphasis which had been submerged for longer than a thousand years. This was a shift from what is remote, future, transcendental, infinite, and contained in a world of rigid ideas, to what is immediate, present, empirical, finite, and contained in a world of things.

Religion was not cast aside nor denigrated, at first, by the resurgence of interest in nature; but the Church was set apart and respected, and speculation had less and less to do with theology, the erstwhile queen of the sciences. The idea that the Church had somehow become alienated from religion was gradually creeping into the popular mind; and the feeling that communion with God was properly a personal and private concern is shown by the attention paid to such mystics as Eckhart, van Ruysbroek, Thomas à Kempis, and others. These men were not professedly rebelling against the Roman Church; but Wycliff and John Huss did avowedly oppose the whole Church system, demanding the separation of religion from all temporal power, and a return to the origins of Christianity in the Old and New Testaments. Here is another example of the scission of the religious impulse from formal religion, which we observed in accomplishment, with Ionian thought, and due in large to the selfsame cause: the desiccation of religious dogma, by the evaporation of faith.

The faith which had evaporated from religion was precipitated mainly into a belief in the ability of natural man to cope with the natural world, an attitude akin to that of Greek rationalism, but with the important exception that the ability of reason was underscored by the Greeks, while the imperiousness of natural fact was the obsession of the early Renaissance. It was a close enough approximation of the Greek mind to explain the restoration of the Classics and the fresh interest in antiquity.

Roger Bacon is often said to have been the first modern man, because of his insistence on experimentation as a method of knowledge; but it should be remembered that he was only one of many others of his time, notably Witelo, Theodoric of

Feiburg, and Alfred Sarchel, who were also occupied with experimentation. These men were not scientists in the modern sense, as was Newton or Galileo. Throughout the fourteenth and fifteenth centuries the interest in empiricism gushed forth in greater and greater torrents; but it can hardly be said that there is much scientific progress from the time of Roger Bacon who included perspective, alchemy, agriculture, and magic, among the physical sciences, to Paracelsus and Pico de Mirandola who practised and studied alchemy and the black arts more than two hundred years later. Empiricism is not the essential method of science, although it was the emotional orientation of that methodology. The development of natural science had to await the abandonment of Aristotelianism, the explanation of natural phenomena by final causation, and the substitution for it of efficient causation. The category of purpose is anathema to the scientist, since it is never evident in the datum under examination, when that datum is treated as an isolated fact. Science always searches for necessary causes, and so, assuming a mechanistic teleology, looks backward instead of forward. Why purpose should be excluded as non-empirical and causality included in the scientific method is a very obscure point; yet such is the case, and, whether the preference can be logically defended or not, there can be no question that these two assumptions are responsible for the peculiar successes of modern science.

In view of this preference, the baffling phenomenon of Leonardo da Vinci may be said to have presaged the modern scientist. Seemingly without any break with the past, Leonardo calmly assumed the method of science: induction with experimentation. There is no indication in his note-books that he was influenced by preconceptions of how natural phenomena ought to behave, but by how they actually do behave. Yet Leonardo da Vinci had little or no effect on the scientific endeavour of his contemporaries, possibly because in the calm acceptance of the new methods he was employing, he gave no indication of a radical break with the past; and so his con-

temporaries were blinded to his exquisite significance; and later scientific investigators had no recourse to his pioneering. On the other hand, Copernicus, did influence his times, perhaps out of all proportion to his accomplishment, by demonstrating through painstaking observation, the validity of the old heliocentric theory. This was the first demonstration, given to the popular mind in most dramatic terms, of the new scientific attitude which did not consider man to be the centre of his world. Moreover, Copernicus became, by the introduction of the scientific method into astronomy, the first modern scientist who confined his labours to a restricted field. Both Leonardo and Copernicus implicitly broke with the Aristotelian tradition, but neither rationalized the new method.

Copernicus died in 1543 and Francis Bacon was born eighteen years later; so that the rational justification for the inductive method had perforce to wait seventy-seven years. Bacon set himself the task of formulating the laws relating to inductive logic, which he held to be the proper and exclusive method of science, repudiating the classic or deductive method. He was in his own words the ringer of the bell that "called the wits together" for a new achievement in the theatre of invention. To do this, he considered it necessary to break with all prior thought, particularly with teleological prejudices. In his eagerness to insist upon the value of empirical data, he seems to have believed that an examination of facts taken by themselves, if sufficiently exhaustive, would reveal all final and conclusive laws of nature. He thus failed to understand the tentative value of induction or hypothesis, and the fact that without the deductive method no fruitful use can be made of any induction; and he did not understand that experimentation, which is a practical check on induction, is essentially a separate process and follows it. No achievement of science has ever been ground out of the Baconian mill, inasmuch as each fact is in itself an induction, and therefore any attempt at a complete inventory of facts would lead to an infinite regress. It must be concluded that his method is worthless, but his

value to the modern cosmology consists in his repudiation of the mediaeval belief in principles assumed without reference to empirical data.

The dispassionate attitude toward facts, as displayed by modern scientists, owes much to Bacon; and so he helped to set the emotional tone of science. Bacon conceived science much as does the average non-scientific man of to-day. Science had for him a positivistic cast in that its world of matter was real and the control of this world for practical purposes its aim. Hence Bacon was certain that scientific discoveries would be demonstrable and *absolutely* true, thus yielding a foundation on which science could indefinitely build without further worry as to the integrity of its construction. With all his value as a herald of what science was finally to mean to the popular mind, he yet had little effect on his scientific contemporaries, men like Harvey, Kepler, and Galileo, who were already employing the method of science: induction plus experimentation plus deduction. It is important to remember that, to a great degree, these scientists, by their passionate reaction against the mentality of the Middle Ages, determined the intellectual cast of the modern mind. In their zeal for research into the hard stubborn facts of the objective world, they forgot that the Middle Ages had been dealing in a set of facts just as hard and stubborn and in the last analysis as empirical as theirs—namely, a set of facts concerning the subject man himself. And so these early scientists cut experience in two, considering the external world as independent, without subject, and dedicated to the uses and technique of science, and they left the internal world to religion and philosophy.

The separation of a world into what was subject to science and what was subject to philosophy, was given philosophical authority by Descartes, who innocently sterilized philosophy thereby. Descartes, primarily a mathematician, employed the deductive method to attempt a certainty of God's existence yet preserve a warrant to examine the world from the point of view of efficient causation. The dualism of the world of

mind and matter was predicated by Descartes in order to save the existence of a god in a world which had triumphantly seemed to prove that matter could be dealt with mechanistically. This dualism is one of the modern concepts most pregnant with confusion, since it has been interpreted as signifying that matter is the more real and therefore justifiably demands greater attention.

Now that Descartes had delivered the external world to the scientists, relieving them of the responsibility of having to connect science in any way with philosophy or theology, Newton took brilliant advantage of the situation to carry scientific investigation to a very high point, and to set the course of physics in a mechanistic direction, a course which it has followed almost up to the present. Newton made plain that he had no dealings with metaphysics: "*Hypotheses non fingo.*" Such a naive statement by a man of great intellect could only have been made because of a faith that the world he was investigating was the real world. This in itself was a metaphysical assumption. He wrote, for instance:

"All things considered, it seems probable to me that God in the beginning formed matter in solid, massy, hard, impenetrable, movable particles . . . no ordinary power being able to divide what God Himself made one in the first creation "

Newton, Galileo, and other early scientists, furnish excellent examples of a religious fanaticism, unconsciously shifted from an outworn theology still necessarily rendered lip-service, to a devotion to the objective world in which alone reality now seemed to inhere. That Newton's mechanism perforce demanded a deterministic universe did not trouble his sleep, since the world he was examining seemed independent of reason, although he took for granted that reason could comprehend it. The logical necessity for the inclusion of man, and consequently also reason, in this deterministic universe, had not occurred to Newton, who therefore reserved for man freedom of thought and action. The practical separation of nature from

man allowed unrestricted sweep to such an imagination as Newton's, and therefore the belief in an absolute separation instead of in a quasi-separation bore good fruit. On the other hand, in his old age Newton felt constrained to worry over the problem of the relation of man to the infinite, and Newton's absurd utterances on this subject point the moral that such whole-hearted preoccupation with the objective world renders impossible any complete human satisfaction. To believe in two religions at once is impossible; Newton had made a religion of the reality of the objective world, the narrowness of which drove him to formal religion in the vain hope that there he would find a faith sufficiently all-inclusive.

We have shown that the empiricists of the Renaissance by their passionate revolt from scholasticism overlooked the empirical facts of man's spiritual consistence, or at the very least thrust them aside to be dealt with as irrational relations. This is understandable in view of the emotional nature of this revolution which sought to annihilate preconception of every kind. The empiricists fondly believed themselves lacking metaphysical bias and simply reading the true account of nature with deific impartiality. Such a belief now seems to be naive; for it never stopped to examine its unproven and tacitly assumed tenets. Perhaps the fundamental presuppositions of the early modern scientists amounted to as fixed a body of dogma as the preconceptions of Christianity. Though the scientists could not be expected to know it, they had succeeded not in banishing metaphysics but in substituting one set of metaphysical premises for another. What were the presuppositions so unconsciously assumed by science in its inception with Galileo, Newton, *et al.*, and so little questioned by science since? These metaphysical presuppositions were: (1) a world of matter independent of perception; (2) the absoluteness of time and space as entities; (3) identities as preserving themselves unchanged, i.e. change as accounted for by the motion of unchanging particles; (4) causality as empirically evident, i.e. past and future as evident in the present. Not one of these

propositions was ever proved; they were merely assumed. Some of them have been questioned by recent scientific research, but largely they are the basis of science and common sense to-day.⁵

The inherent contradictions involved in the use of the avowedly empirical method, together with the radically non-empirical inductive method, did not trouble science because for practical purposes the alliance was successful. Nevertheless, this unresolved dilemma now presents a shocking confusion when an interpretation of scientific theories is sought in terms of their relation to experience.

The attempt of philosophy to resolve the dualism of sensation and reason by the postulation of a non-material substratum failed. Leibnitz predicated independent monads of force which functioned by pre-established harmony, without interaction or derivation. Thus he endeavoured to save a real world of particulars with which science could deal, while at the same time making that world susceptible to reason. Yet, inasmuch as he could show no interaction between his monads but only an inexplicable parallelism, he ended with the same uncompromising dualism of mind and matter as Descartes. So Leibnitz not only failed to bridge the ever-increasing hiatus between sensation and reason; but indeed, by his invention of the differential calculus, he presented physical science with one of its most subtle tools, and one which carried it even further away from common experience.

The progress of the physical sciences would not have been possible without the simultaneous development of mathematics, inasmuch as the history of physics is the history of a gradual increasing use of quantitative analysis and a gradual abandonment of qualitative exposition. As we have stated, science concerned itself deliberately with only those aspects of experience which are indubitably objective, that is, those aspects about which all observers always agree. The scientists of the seventeenth century knew that qualities like hot, green, sweet,

⁵ For a further discussion of these points, see Chapter III.

etc., were not susceptible to scientific examination (i.e. observational concurrence), since they could be neither weighed nor measured exactly; they decided that these qualities were not entities inherent in the objective world but mental effects which science must disregard. Qualities seemingly subjective were henceforth abandoned, but the stubborn quality of extension was retained as objective, and space (with its implication of time) by which extension was apprehended was also retained as objective. Mathematics alone deals in this extreme of abstraction, and because it is constructed from the fundamental mode of perception, i.e. discrete unities whose discontinuity demands the concepts of the integer and the plural, it seems to possess the most indisputable and objective truth. These concepts are self-evident, since man is incapable of thought without the use of these terms. Reason itself is grounded in the axiomatic acceptance of the one and the many; it is the basis of consciousness.

But if mathematics is impossible without the concept of multiplicity, multiplicity itself calls for the prior concept of a fundamental unity or it has no meaning; and its self-evidence indicates therefore both a fundamental unity and a pluralism (discontinuity) on the plane of experience. This argument is offered as further proof that our metaphysical postulation of a fundamental unity with an experiential discontinuity is valid, and that those who postulate a "fundamental dualism" are defending a contradiction in terms. Hence all dualistic theories are vaguely unsatisfactory, even though dualism seems to check with common experience.

The reliance of science on mathematics, given impetus by the seventeenth-century scientists, has become the authoritative scientific method. Meyerson quotes Paul Tannery to the effect that Aristotle's scientific system "conformed much more to the immediate observation of facts than ours."⁶ But science did not follow Aristotle, for, starting with a strictly empirical intention, science found it necessary to discard all qualities

⁶ Meyerson, *Identity and Reality*

except quantity, since all others seemed to reveal themselves as subjective, i.e. non-existent in every but a mental sense; and so science has ended with a pure mathematical subject-matter, i.e. deductive reason, which is remote and embarrassingly disconnected from empiricism. This constitutes a paradox because science has never understood that quantity itself is a quality of the same nature as those it discarded. Quantity, or discrete unity, as we showed in Chapter I, is a concept, however irrefrangible and fundamental. Science has held this fundamental concept to be the sole entity of the physical world, and the discarded concepts of quality, abandoned by science as irrelevant, have been described by psychology and its ancillary philosophers as *sensa* having no understandable existence, that is, assumed to be mentally added to the physical world as the result of the physical ingression of that world into the mind. The greater and greater abstraction of mathematics points the direction that science has been following: altogether away from the world of common experience and toward a position reached by abstracting from abstracted abstractions, until it is unable any longer to explain its concepts in terms of common experience or indeed in any terms at all save those supplied by mathematics. Is it possible that this high abstraction can be taken to be the sole objective reality? This is the present end of the process innocently begun by Galileo, Newton, Leibnitz, and Descartes, by the abandonment of qualitative in favour of quantitative science.

So far, we have exhibited the spirit of empiricism as the emotional revolt of the Renaissance, and traced its effect only in physical science. This spirit was certain to have had some effect in every phase of life. It first occurred to Hobbes to explain social institutions, particularly the structure of the state, by the new formula; and so he set the style which the social sciences have emulated, fruitlessly enough. For what are the empirical facts of social existence? Hobbes saw one group of facts where another observer would have seen another. To Hobbes, living in a period of stress and turmoil, man

seemed a ferocious beast, and the only explanation he could offer for an enduring society or government was that the state was a social contract entered into for mutual protection by human beings naturally inimical to each other, who, without government, would long ago have destroyed each other. This conception had also been held by Machiavelli, to justify the autocratic conduct of a sovereign.

The empirical fact of social life is the whole behaviour of man as automaton, and any construction that can be put upon his behaviour is in the nature of an individual judgment. Therefore social facts cannot be isolated, or agreed upon, with anything like the same degree of accuracy as can physical phenomena. The abstraction of certain facts from human behaviour thus results, as with Hobbes, in merely confirming a prejudice. The subsequent development of the social sciences has shown the barrenness of this approach to a study of the conduct of man in society. In the field of social behaviour, concepts are so evidently relative and fluid, that to handle them as definite entities is to obtain a result which may appear plausible from a logical critique, but which can have no absolute application nor even a relatively useful one. It is indeed like making ropes of sand. This can be exemplified in sociology: "criminal" is a definite word with a very indefinite meaning, since it would be defined differently by different sociologists. Yet according to the scientific method, made classic by physics, the term should carry one and only one meaning, like the term "oxygen." If chemists disagreed on what is meant by such a term as "oxygen," there could be no serious science of chemistry. The simple truth is that a term such as "criminal" is a vague judgment relating to ethics, and consequently to values, and its meaning cannot be isolated in any exact sense, but depends upon the entire context of the individual occasion. If the word "criminal" is generally accepted to mean one convicted before a court of law for what is termed a criminal offence, the judgment of a court of law is merely replaced for the individual judgment, and we are faced with the strange

conclusions that an innocently convicted man is a criminal, and an extortioner who has never been brought to trial or condemned is *not* a criminal. Certainly, any deduction made from such a definition would hardly be seriously interesting, though it might be amusing, to an intelligent adult. Social behaviour does not lend itself to the method of natural science. If social science exists as a possibility, its approach must lie in a direction which no one has yet been able to chart. Pathetically enough, however, the hope to-day is that social science can be developed in imitation of physical science to the extent to which the latter has been successful, and that such a perfection of social science will bring about an earthly paradise.

The application of the ruling mechanistic conception to social behaviour as begun by Hobbes was carried further by Vico to a fully developed theory of the automatic functioning of society in a prescribed cycle. His work is a further example of how easy it is, by abstracting certain apparent elements from social behaviour, to postulate an invariant mechanism. This should give the physicists pause; for even in the physical world, such abstractions are arbitrary and have no final reality, but represent one approach, however fruitful, selected from an infinite number of approaches. Indeed, it might be said that any theory must have some small applicability, even in the field of social behaviour where the possible abstractions are obviously infinite.

How was formal religion faring since the thirteenth century when theology was divided from science? Nominalism had triumphed in two ways: by causing the Church to secure its dogma by fiat safe from attack, and by driving to either tacit or open rebellion those who could not agree to subdue their exuberant spirituality to such a conservative obscurantism. The mystics sought an untranslatable direct communion with God, without the intermediary of institutionalism; but by far the more significant divagation was the inception of a revolt activated by this principle of direct communication. This was the Reformation. With Protestantism were logically affiliated

The temporal revolt from the Church, the bloody secession from the Holy Roman Empire, and the decline of the sovereign who was supposed to hold his power from God. We have shown that nominalism by denying the transcendence of universals was subversive to hierarchical government of all sorts, and for this very reason Protestantism was bitterly opposed and defended by factions unconcerned with the religious side of the controversy.

Protestantism attempted to weld together the world of common experience with religion, after their official separation as revealed and natural theology, effected by Thomas Aquinas. It also attempted to return to the Bible as the source of revealed Christianity, and to make it available to individual interpretation. In attempting to reintegrate the things that are Caesar's with the things that are God's, Protestantism gave divine sanction, at first, to all revolt against central authority, thus hastening the idea of democracy, and substituting for the divine right of kings the *vox populi* as the *vox dei*. But as Protestantism rapidly hardened in the dry air of the eighteenth and nineteenth centuries, it lent its approval to Philistine respectability and the sanctimonious self-endorsement of worldly success. Such rank growths as the religion of the gospel of business owe their origins not a little to the attitude engendered by Protestantism; and indeed the *a posteriori* justification of acts called pragmatism is not far removed from this attitude. Protestantism was an easy religion for an age which had adopted a mechanistic teleology whereby the God who had sanctified whatever "worked," demanded no special attention except on Sunday during His office hours.

From the right conferred by nominalism to deal with God without benefit of mediation, to the natural rights of man in the material world, was but a short step. Politically, this was exhibited first by the subjugation of the nobility and by the rise of the great sovereign states, like France and England. Revolutions for the rights of the common man followed first in England, then in France. The spirit of nominalism was

in evidence behind this as an active ferment, stirring man to unprecedented and ungoverned activities, since if he was the creator of universal ideas, there could no longer be an inhibition of his endeavour in any field whatsoever. Invention, trade, colonization, exploration, and the attitude of empiricism were all manifestations of the same conviction of the subjectivity of concepts. But this spirit, no matter what its triumphs, was charged throughout with a woeful scepticism and despair, and with a moral nihilism that carried within it an unmistakable homesickness for certainty. The unfettered concern with the physical sciences, engendered by this spirit, plus a wayward, because aimless, direction of human activity, logically produced an unbridled industrial expansion which is efficient at close range but meaningless in perspective.

The struggle to rationalize the reigning faith in empiricism had its ablest exponent in Locke. Starting from a belief in the external world of matter, Locke was faced with the problem of the perception of that world by the human mind, the problem of knowledge, which has obsessed European philosophy like a pestilence and at the same time cast a slur on ontology as being somewhat soft-headed.

It may be parenthetically remarked, of course, that thereby epistemology begs the ontological question, for to find out how knowledge is possible, one must have a prior conception of what the object of knowledge is. This exclusive interest in epistemology has opened up the science of psychology, which purports to be a study of the mind, and assumes the method of the physical sciences. Just how far psychology as a science is valid will be discussed in Chapter IV.

Locke divided the world into primary and secondary qualities, and allowed reality to attach only to the motion of extended particles. Here for the first time were explicated the metaphysical assumptions of physics, in almost the same form as the mechanism postulated by Democritus.

In dealing with the Greek cosmology, we indicated that the logical following through of this mechanism to the point

Where reason would come to doubt its own efficacy, was not followed. In the modern world, however, this logic was vigorously prosecuted by Hume to exactly this conclusion. He reasoned from a searching critique of radical empiricism: if, as Locke stated, all perception of the world be merely human impressions, how can certainty as to the existence of any kind of substance be justified? Moreover, what are presented in sense perception are disparate objects which in themselves show no connection with the past or future. Thus causality is an inference, arising from temporal sequence, and not an evidential fact. Therefore no induction can have absolute validity, since there is no warrant, other than utter faith, that what is now observable is connected with what has been or will be observable. If Hume is arguing correctly, there can be no empirical basis for reason, and the laws and concepts of science are empirically undemonstrable.

This argument of Hume's has never been answered by science, which, in passing it by, has shown, first, that it is dogmatically scornful of philosophy, and secondly, that it has created for itself and for the lay world a distressing confusion as to what science is, a confusion which might have been cleared up by honestly facing the issue when it was first raised by Hume. The dilemma of empirical data versus reason is a restatement of the dilemma of nominalism versus realism. Simply stated, this is as follows. If perception is accepted, it seems to hold in itself no justification for the introduction of reason, i.e. it contains no *necessary* relations. Yet without necessary relations, perception yields merely a parade of phenomena. As Kant pointed out, perception without conception is blind. Nevertheless, reason seems to be superimposed arbitrarily on phenomena; therefore the end of this chain of logic must be that reason is spuriously introduced; and thus reason comes to doubt the ability of man to reason effectively. But this is a self-evident absurdity. As we have shown in Chapter I, the fallacy here is in supposing that perception is a blank mirroring of an independent world, and,

that conception is a separate operation altogether, which works over the data supplied by perception. In our analysis of perception we endeavoured to show that each percept is itself a series of concepts, that is to say, a percept is unknowable except as a hypostatized *meaning*. A percept we have defined as a relatum built up from relations serially ordered from relata, which in turn are built up from other relations; moreover, each relatum implies relations of greater inclusiveness which go beyond itself. Thus the supposedly discontinuous empirical world of Hume's is a mere abstraction; and naive experience does not deal with it. Viewed in the light of our explanation, the dilemma is resolved; for without reason there can be no perception. We thus go one step further than Kant, and state that perception without conception is impossible, from the fact that the whole mode of ingression of the world into the mind is determined by the fundamental concept of discrete unity. Therefore the world of experience can justifiably be interpreted by reason, inasmuch as all hypostatized meanings point beyond what is immediate. Although we justify the use of reason, we must agree with Hume that induction cannot ever yield absolute truth.

It is well in discussing the eighteenth century to pause and consider what was the intellectual heritage from previous years and to note what stage of development these ideas had attained. Such ideas were the following:

The complete surrender to empiricism.

The acceptance of a mechanistic universe wholly explicable by science.

The corollaries to the above consisted in a growing distaste for supernaturalism and religion, together with the rise of atheism; faith in the perfectability of society by rational (i.e. scientific) method, leading to humanitarianism and the rights of man; a disdain of romanticism, occasioned in turn by the revolt against the mystical, and a static and prosaic attitude toward everyday life. The fact that empiricism and mechanism were

irreconcilable, as Hume had shown, does not seem to have troubled the "age of reason." The interest lay rather in practical affairs and in applying and spreading the fertile ideas which were inherited, to all phases of life, with the consequent annihilation of old traditions and prejudices, the clearing up of vestiges of mediaevalism. The current of the eighteenth century ran broad rather than deep; and no truly original ideas were initiated. An ample eupeptic spirit dominated the day; an unbounded faith in the common sense of mankind gave rise to all sorts of refinements of intercourse. It was the age of invention, the application of the findings of the great scientists to practical affairs for the first time. Also, this century developed the ideas of the seventeenth-century scientists with enormous success, particularly in mathematical physics and in the new science of chemistry.

In the formation of the modern mind the eighteenth century was chiefly important for its effect on the outlook of the common man. Heretofore, despite the great developments of science and the change in the traditional attitude of the intellectual, the common man was still largely mediaeval, and was still unable to see any connection between the scientists and the inexplicable decline of religion. But now, led by men like Voltaire and the Encyclopaedists, he was suddenly introduced to a fresh and disturbing independence, he was made aware that his own reason had authority and that he might thereby become the master of his own destiny. Thus, although the idea of democracy was far from established, the rigidity of caste was weakened, and the attention of the common man was driven outward upon the material world. From this century to the present, there has been a steady increase in interest in the factual world, and a growing respect for the kind of success possible in that world, together with a gradual collapse of the integrity of morale. It is true that the physical life of mankind, no longer subordinated to spiritual concerns, was improved to greater and greater extent as the "conquest" of physical nature became an exciting adventure. It was the

spread of this ideal which prefaced the advance of applied science, and made possible the rapid development of modern technology.

The result was that an age which superficially seemed to be bringing back the Hellenic perfectionism of reason, was simply paving the way for the new dogma of abstract possession, for a religious emphasis on the external world of matter. But this emphasis carried its own condemnation. That the ideal of material progress is pathetically inadequate was obvious here at its inception. The very men who proclaimed this new creed—Voltaire and the Encyclopaedists, Samuel Johnson, Godwin, Paine, etc.—were so thoroughly saturated with pessimism, and so disgusted with the very type of civilization which they professed to exalt, that the point is only too plain: the so-called rationalism which does not take into consideration man's unwillingness to be limited to any finite boundaries, carries within it its fatal end in a brief nihilism, a nihilism so complete in its inability to allow any value pre-eminence over any other, that its followers must decide between suicide and fanatical fidelity to the first transcendental doctrine offered as a sanctuary.

The disproportionate influence of Rousseau on the modern mind is thus accounted for, coming as he did to an age eager to embrace anything except the tangible. The easy success of romanticism was not a special tribute to the genius of Rousseau, who seems more than any other elected by destiny to have been a child of his times. Moreover, the natural rights of man as a social theory is not far from the eighteenth-century idea which, following Locke's psychology, expressed a necessary equality of all men. The revolution of the bourgeoisie was symbolized even in the "shepherdesses" of the crockery French Court.

Since the Renaissance, empiricism had been turning the attention of Europe toward commerce and trade; by the end of the sixteenth century England and Holland were already in possession of a flourishing world trade. The seventeenth

and eighteenth centuries saw the entry of France into competition for world markets, and the decline of Holland as a major factor in this struggle. Before the introduction of power-driven machinery in the last quarter of the eighteenth century, France, and particularly England, were prepared for the change brought about by this improvement. Undue emphasis has been laid upon what is known as the Industrial Revolution. It is our belief that the Western world had already gone two-thirds of the way, and that machinery simply accelerated and made more acute the process. As Gina Lombroso has ably pointed out,⁷ the inventive talents as well as the beginnings of the actual machinery requisite for industrialism were not the attainment of this particular age only, but had existed in former ages; what was wanting before, however, was the proper receptivity toward the use of these talents and tools. No world-order except the modern has ever shown any enthusiasm over the endless increase in material goods, nor considered it aught but a rather base occupation to exchange goods for profit. The radical shift of attention toward the external world of matter we have shown was inaugurated decisively in the form taken by the rebellion against mediaevalism. Thus it was the early empiricists, like Bacon, Bruno, and Galileo, who unintentionally set the stage for the advent of industrialism. James Watt patented the steam engine in 1769; but Europe had already explored and made maps of distant countries with which it was engaged in a lively commerce. It was an age which had seen the introduction of new agricultural products and their culture into European countries from distant lands. Business, as we know it to-day, and finance had long been in operation; exchanges were operating and there were banks in every city of any consequence in Europe; roads had been repaired and new ones built, and diligences plied regularly by night as well as by day; to meet the demand of travellers, fast becoming plentiful, inns had been established at frequent intervals; the postal

⁷ *The Tragedies of Progress.*

service was in operation; newspapers were issued regularly. The old governmental interference in the production and distribution of merchandise, carried over from the Middle Ages, was relaxed. These were the days of Adam Smith, Bentham, free trade, *laissez-faire*, and the free play of competition in the belief that the "laws" of supply and demand could operate successfully without "outside" interference.

But the spread of the empirical attitude met with some opposition. We have spoken of the reaction against the age of reason with its drab beatification of common sense, and of the exuberant acceptance of romanticism by a civilization which had thought itself too intelligent to be deluded by anything savouring of the mysterious or the irrational. This disgust with boundaries too finite had already been expressed in philosophy by Berkeley, who held on to infinity by regarding the finite as a product of cognition. Also Kant's analysis of how knowledge is possible was in a measure directed toward the preserving of the dignity of human reason in the face of the indifferent world posited by science. Despite the school of neo-Kantism which arose after his death, Kant does not seem to have satisfied the romantics, because he could not give any but an *ad hoc* reason for his belief in an infinite.

The effect of the reaffirmation of life, which was romanticism, was reflected also in the refflorescence of art throughout Europe. The poetry of England, the painting of France, and the music of Germany, at the end of the eighteenth and the beginning of the nineteenth centuries, are all examples of this.

The meeting of the romantic impulse and the rationalism of the eighteenth century was dramatized in the French Revolution. The details of this upheaval illustrate how impossible it is to keep separate the rational background of an era from the ebullience of the human spirit which recognizes no finite boundaries. But here was no true union, because eighteenth-century rationalism was not truly rational at bottom, and romanticism was a sentimental yearning for blurred vistas, an insistence on the pathos of the temporality of things. The

embrace of these elements, before it wore itself out, was the cause of the brief artistic renaissance which later eventuated in a doctrinaire aridity, very far from the freshness of its origins. To-day it would seem that the French Revolution merely made more certain the constitution of society for the development of the unofficial faith in the abstract possession of material goods. It gave the land to the peasants, destroyed most of the remaining vestiges of feudalism, and began a democracy such as Voltaire had unintentionally sought, for lackeys and servant girls participated in it.

Democracy as conceived in the eighteenth century meant an equality of opportunity, deduced from the orthodox psychological notions of Locke. The American Declaration of Independence was a perfect statement of this doctrine, which held that it was "self-evident, that all men are created equal." The eighteenth-century advocates of democracy fondly imagined that political equality would make men free and equal and keep them so; they did not intend, however, that democracy should be construed as denigrating the quality of the aristocratic ideal and the primacy of the intellectuals, nor did they wish to introduce a levelling of opinion downward, on the theory that one man, no matter how small his attainments, was as good as another. Unfortunately, the expectations of the great democrats have been entirely defeated; first, democracy did not free men, but in an industrial society kept them enslaved without granting any protection in return for their slavery, and the hollow right of franchise was a negligible remuneration for the loss of all economic security; secondly, the opposite cultural effect from that intended transpired, for, instead of refining the opinion of the masses, democracy succeeded in vulgarizing all opinion through the exigencies of industrial opportunism, and rendering intellectual pursuits precious, exotic, and always ludicrous, to the common man. It has also driven the most penetrating intellects into the only intellectual realm admired by the masses: the field of technology, where results are achieved that the average

layman applauds. It spread education so thin in order to make it universal, that to be educated to-day is to possess only a superficial smattering from a vague mass of uncorrelated and unassimilated data. Socialism and communism were logical corollaries of the democracy which failed to free common man, inasmuch as both attempted to add economic equality to political equality. Socialism and communism are not new ideals, but simply the development of the emphasis on material things and the corresponding humanitarian belief that physical welfare is the greatest good that can be bestowed, and that a satisfaction with life depends solely upon economically conditioned comforts. Thus both Russia and America are pursuing the same ends, which sprang from the same eighteenth-century rationalism, although it would seem for the moment that Russia is the more horribly single-minded and logical.

The nineteenth century has been called a stupid century, and perhaps it was, in comparison with the seventeenth, and even the eighteenth. It would not be going too far to say that it was deliberately stupid, if by stupid is meant the development in complacent mood of what had been previously uncovered. In this development, of course, it was far from stupid, but, on the contrary, was exceedingly brilliant, it carried the science of the seventeenth century to a very high degree of attainment, and brought the social ideas of the eighteenth to their fulfilment in shallowness and futility. The nineteenth century pushed to their final absurdity the ideas which underlay empiricism in its inception, i.e. an independent mechanistic world of matter, together with mechanism as applied to every field of thought, and so presaged the unconscious demonstration by the new physics of the limitations of the mechanistic approach. This will be explained more fully in Chapter III.

The most nearly original contribution of the nineteenth century was made to the science of biology. Yet it is obvious that the mechanistic approach to biology was in direct imitation of physics. The concept of the cell was one with which the biologists were happy, since it paralleled the atomism of

chemistry and physics. The only rival to the mechanistic theory was vitalism; though it must be agreed that vitalism has put up a losing fight and has served only to entrench the mechanistic conception. Vitalism is a bastard theory, inasmuch as it accepts the same physical explanation of organism as does mechanism but begs for something more, without justification, and from the outside. The refutation of mechanism is hardly to be found here. Certainly if the much sought-after production of life, in the laboratory, could be achieved, vitalism would be totally refuted; but would the position of mechanism be finally demonstrated thereby? We think it would not, because such an achievement would leave unanswered the question of the nature of inert matter, which is *in esse* as unknowable as life itself.

There were two unique developments within biology which are principally associated with the nineteenth century: the advance of medical science and the theory of evolution. With Pasteur, some knowledge of the part played by micro-organisms in disease became known, and a real advance was made in etiology, as well as in hygiene and asepsis. All this was a very great addition to human culture, so patently superior to anything that had ever been accomplished in the same field by previous civilizations, that one must sympathize with the much maligned practitioners who are now expected by the general public to perform impossible miracles, whereas they are only humble dispensers of a comparatively fresh body of knowledge. At the same time, it is very evident that medical science, too, has been delimited by its imitation of physics in its search for simple cause and simple effect in biological phenomena. Mechanism, which is the abstraction of simple cause and effect, is the proper approach to the machine, but not to the living organism where, if anything, mechanism expresses a misleading analogy. But this is fast becoming known and demonstrated through hormonology and blood chemistry, where an amazing complexity of processes is beginning to be glimpsed.

The effect of science on the modern mind is hardly to be found in science itself. The modern mind and science were perfectly parallel developments, as we have been endeavouring to show, with the same emphasis, and from the same emotional origin. It is true that such scientific successes as the ordinary man is capable of comprehending have from time to time reinforced the specific form of the modern mind, and, by consequence, the certitude of science. Even without interaction, one is the mirror of the other. In general, however, it cannot be said that the modern mind has felt the direct impact of scientific concepts and methods, which on the contrary it has continually misunderstood. This direct impact of scientific theory on common opinion has occurred only twice in the history of European thought: first, with the acceptance of the Copernican theory which displaced the proud conviction that man's earth was the centre of the physical universe; secondly, with the acceptance of Darwinian evolution with its requirement of a common ancestor for all life. In the Darwinian theory humanity was relegated to the same level of accidental being as the giraffe. Previously, Lamarck had offered a theory of evolution more acceptable to vitalism, and by consequence more flattering to man; but further biological research decided in favour of Darwin's theory of natural selection, and although this theory is no longer biological gospel, inasmuch as fresh investigation has rendered it inadequate, the newest ideas are, if anything, even more mechanistic than Darwin's original hypothesis. Much more can be said even than has been said on the subject of natural selection; but all we need concern ourselves with is its effect on the modern mind. This admitted hypothesis of Darwin's, framed as a generalization, was, through such popular philosophers as Spencer, Nietzsche, and Bergson, corrupted to a point where evolution, employed as a vague name for any change whatsoever, was identified with the destiny of the universe, blind progress toward the creation of a superman, and the *élan vital*. Moreover, the innocent phrase, "the survival of

the fittest," which is a truism inasmuch as survival is made the test of fitness, has been construed as a justification of violence, of force, and of opportunistic ethics. Evolution has been, in general, one of the most fruitful sources of confusion in the intellectual life of the modern age, since "evolution" seems an easy explanation for everything, whereas it is simply another way of stating that things happen as they happen; and the essence of the problem remains: *why* do they happen that way and not otherwise.

In the nineteenth century, empiricism, which was gathering momentum, split into two seemingly opposed philosophical movements: on the one hand, positivism; and on the other, voluntarism. Both strove to proceed from the dilemma of empiricism as stated by Hume; both were palliative in that they admitted the impotence of man metaphysically to comprehend the natural world, and sought to substitute for this impotence a compensation in experience.

Positivism, by professing the fundamental incompetence of reason to account for phenomena, concentrated on phenomena as the nearest form of certainty possible, with the programme of building with this sort of knowledge the best practical world. The positivists, then, stressed practical reason, but through their admission that the world of phenomena was fundamentally irrational, they put a fatal blight on reason itself, and thus reached a permanent scepticism of their own. There is no objective distinction between pragmatism, the philosophy of experience, and positivism: all three stress the use of reason as a guide to action, but all maintain action as an irrational. Thus with all the accent on proximate ends and no possible way of arriving at more inclusive ends, positivism stands as a perfect philosophical expression of the bewildered modern age.

Starting from the same assumptions as positivism, namely the impossibility of approaching rationally, ultimate reality, the voluntarists, influenced perhaps by a romantic bias, concentrated on the natural impulses or appetitions, which

therefore seemed opposed to reason. Modern voluntarism derives from Schopenhauer a passionate rationalist who, witnessing the seeming defeat of rationalism on every side, inferred that reason was powerless to control will, and identified will with the urge to life, as blind cosmic appetite. He thus rationalizes will, but leaves reason as an irrational. The inferred opposition of reason to the universe led Schopenhauer to pessimism; but voluntarism is not necessarily professedly pessimistic. Indeed, with later voluntarists, such as James, who threw in his lot with will and naturally therefore attacked the ability of reason to understand nature, a pseudo-optimism is temporarily expressed, because he would not bravely identify himself with a lost cause and take the consequences. This much may be said for voluntarism. It saw that in the life of entire man there is much that is passionate, evil, and irrational, and it no longer took the facile position that reason was an efficient policeman. Every philosophy to-day is obliged to reckon with voluntarism, unless it be content to be a philosopher's dream of a world of inhuman idealism and emotionless men, but it must deal with an honest voluntarism, like Schopenhauer's, and not with a mock voluntarism like that of James, or like Freud, who supposes that the appetitions are feeble things, capable of being directed and sublimated by a little skill.

With James, voluntarism again met positivism through the substitution of psychology for practical reason. For psychology is the application of reason to mental data approached empirically as irrational. But once again we wish to show that reason cannot work order out of chaos when the very tool for this ordering is distrusted. Voluntaristic pragmatism is bound to pose the metaphysical question of what is reality; and any philosophy which does not even attempt to answer this question is, through its shallowness and superficiality, sure to end in scepticism and despair. Empiricism as a fundamental principle led in the nineteenth century to a blind alley; and it is doomed to abandonment.

From what quarter could the indication come for a re-orientation of the modern mind? The main line of European philosophy after Kant: Fichte, Schelling, Hegel, Bradley, and Whitehead, has failed to affect it. This is due to two causes which also explain and clarify the character of the modern mind: the separation by science of the realms of philosophy and science, and the acceptance of this separation by philosophy. This necessarily rendered philosophy abstract, remote from a concern with common experience, and therefore seemingly a futile intellectual exercise, like a game of chess. Also philosophical theories seemed not to affect in any way the progress of scientific thought which, on the other hand, did affect common experience; science therefore felt no need to concern itself with the problems of ontology and epistemology, and, rather proudly, boasted, following Newton, that it ignored metaphysics, and it went ahead cheerfully with its heuristic mechanism. Theoretical scientists thus gained the reputation for being hard-headed, whereas philosophers more and more were deemed soft-headed and ineffectual.

In what way can philosophy, without admitting the supreme authority of science, again gain recognition and again affect common experience? This will not be accomplished by philosophy alone. As long as science can progress without reference to metaphysics, even another Plato would be powerless to touch the basic concepts of the modern mind. When, however, the philosophical concepts on which science has based its advantage are shown by science itself to be no longer adequate, and allow no interpretation to be put on the new concepts of physics, science perforce must seek a new philosophical springboard. This is the subject of Chapter III. Moreover, to reinforce the need for a return to the acknowledgment of philosophy, comes a confusion of common experience as to all ethical and aesthetic considerations. Whatever valid philosophy will be evolved must affect every phase of common experience, as well as the assumptions and therefore the direction of physical science.

Nevertheless, mechanism reigned supreme in the nineteenth century; and indeed it seemed to justify its position. The development of all branches of physical science confirmed the apparent rightness of the mechanistic attack on the nature of the physical world. Early in the nineteenth century Dalton demonstrated in chemistry the atomistic construction of matter, and changed what was formerly a philosophical concept into a physically demonstrable one. At the time, this was a great triumph for the mechanistic interpretation of nature. Further developments of thermodynamics, and the discovery of the law of the conservation of energy, turned into a conviction the hypothesis that the universe was a closed system ruled by strict causality. Physics went on from one triumph to another, and the mathematics necessary for the formulation of its laws came *pari passu*, until it seemed that physics and mathematics were by nature interconnected. Meanwhile electromagnetics and the electromagnetic nature of light were added. Gradually progress was made toward the unification of branches of physical theory; and seemingly diverse concepts were made to reveal one constitution.

The first hint that mechanism as a philosophical concept was going to be inadequate for science did not come until toward the end of the nineteenth century, when the mechanical ether postulated as the medium for light waves could not be so postulated as a medium for electromagnetic fields. In order to retain a mechanism, it would have been necessary to suppose two different kinds of ether, but this *ad hoc* theory appeared too preposterous. And so the matter has rested, with mechanism demonstrated to be impossible while remaining provisionally adopted.

The practical possibilities of theoretical science at the point of its highest development gave the nineteenth century its abundant opportunity to develop technology past anything ever imagined: the dynamo, from Faraday's experiments; the telegraph and the telephone, from electromagnetics; the perfection of the steam engine, from thermodynamical prin-

ciples; and the precision and efficiency of all mechanical technique through the use of mathematical-physical theories. But it is not to theoretical science alone that the great technical developments of the last part of the nineteenth and the first quarter of the twentieth centuries were due; for technology, as an independent endeavour, enlisted the greatest talents of the times. Many of the technical devices for which the public gave credit to science were the clever and painstaking inventions of engineers who were not theoretical scientists, of which class Edison might stand as an example. Experts, or engineers, arose in every field of mechanical endeavour, improving methods and technique to a remarkable degree of efficiency. Thus the specialist who was expert in one field, by multiplication, gave rise to the myth of the millennium by engineers. Arguing by analogy, any specialist in any subject was expected to be able to make his "machinery" go, smoothly and efficiently.

The ideal of the efficiency of mechanical production may be held blameless from a particular abstracted viewpoint, namely the viewpoint of man as a complicated mechanism with certain known requirements. For some purposes it is true to say that humanity fits this description; but the application of mechanical efficiency by itself negates other human qualities which clamour for recognition and attention. Even in industry the efficiency of machine technique demanding complete standardization, and consequently mass production, is an incomplete ideal. With such problems as rapid transportation and the handling of raw materials, standardization has been a practical good. When, however, it enters into the field of merchandise not purchased altogether for reasons of utility, standardization has had to exert aesthetic coercion upon the consumer. This is illustrated by the widespread use of advertising and by the cult of salesmanship.

Moreover, the success of mass production depends largely upon the populations of backward countries, from whom raw products must be obtained cheaply, and who must be

persuaded to purchase the manufactured products by such means as "education," "civilization," navy, and marines. The organization of militarism has reached a vast importance far beyond any militaristic desires on the part of those involved.

Finally, for those who would explain economic problems from a strictly economic standpoint, there is the phenomenon of the mystical attitude toward mass production and indeed toward business in general, without which there could have been no such widespread and rapid preoccupation with these affairs. The employment of art, religion, and emotionalism of all sorts, in the cause of the distribution of manufactured merchandise, is more than just a cleverly executed idea hit upon by the leaders of industry who are themselves indifferent to it; it is a proof that the faith of the age has seized upon to embellish and worship that which, however shoddy, it has agreed to consider the most real.

V CONCLUSIONS. MAIN DERIVATIONS OF THE MODERN WORLD-ORDER

We have followed the main currents of thought with a view to accounting for the elements and structure of the modern mund. In general, we have derived it from two main sources which come together in a single great stream, as follows:

- | | | |
|---|----------------|-----------------|
| 1 | Greek realism, | } which meet in |
| 2 | Nominalism, | |
| 3 | Empiricism | |

1 (a) By the change from Platonic realism, which had entirely dominated the mediaeval world-order, to Aristotelian realism, the Greek influence contributed to the rise of empiricism, although inherently opposed to it. As long as Platonism was supreme in Europe, there was no question as to the objective reality of universals. Attention was directed to theoretical reason as the only basis for the understanding of the universe. Institutional authority could not be questioned, since it was the expression of real Platonic Ideas. The notion that the

natural world was apart from man and could be made over by him did not exist. When Aristotelian realism was substituted in Christian philosophy, due to the contraction of dogma from which faith was fast evaporating, a subtle shift in emphasis was effected, which was both a symptom and a contributing cause for further change. Aristotelian realism, which modified the Platonic independent reality of universals into a reality of universals only in so far as they are immanent in particulars, threw importance on the external world although it did not disconnect nature from reason; and that external world remained statically subject to universal forms, which were identified with the concepts of reason. In its historical context, this amounted to a half-way position between mediaevalism and modernism. (b) But the influence of Greek realism is not exhausted in its service as a transitional mode for the construction of empiricism. The rigidity of concepts, insisted upon both by Plato and Aristotle, although denied objective reality, has persisted in influencing the modern mind in the form of a stubborn mode of thought which remains very much at variance with the dominating nominalism. Greek realism survives as a subdominant force and a potentially dominant one, as exemplified in the ready reliance of science on mathematical truths.

2. Unquestionably, nominalism rules the modern world, so much so that present-day successes can be shown to contain what truth is inherent in nominalism, and its failures what fallacies are implicit in nominalism. Nominalism, arising at the end of the Middle Ages in protest against a fixed Platonic order, denied the objective reality of universals, and identified them with concepts or names invented by the mind, having none but a mental existence. It therefore immediately opposed two worlds: the external or physical world, and the internal or mental world. The same process accounted for the separation of science and religion. Nominalism rendered religion inexplicable by science and rendered the material world of sensation fundamentally irrational. Yet by setting up particulars

as alone objectively real, it surrendered all authority to this external world, which by its exclusive reality demanded a spiritual allegiance.

3. This spiritual allegiance to the objective world is the religion of empiricism, by which the Renaissance was characterized and which has continued unabated to the present day. Empiricism is a product of nominalism, but it also owes something of its start to Greek realism, in the manner we have shown. Empiricism gave rise to modern science, but only after it had dropped the Aristotelian category of final causation and adopted efficient causation. By a parallel development, it also gave rise to the contemporary cosmology. From its very source, empiricism was anti-rational; and this fact colours science as well as common opinion.

Science, ignoring its irrational source, and waiving the necessity for metaphysical authority, assumed that it neither had any nor needed any; and, accepting a facile mechanism, it continued its successful development along physical lines uninterrupted. The science which was developed is the expression *in excelsis* of an empirical preoccupation with the external world of matter, approached as an irrational yet explicated by reason.

Common experience has in a parallel manner been affected by empiricism, and here the effect has been disastrous. By a slighting of the reality of concepts and appetitions, it has destroyed all objective criteria of value, and thus caused a moral nihilism and a scepticism; it has forced an undue concentration on matter as primarily real and it has set the problem of how reason, which it must employ at least in reason's practical aspect, can be effective at all in dealing with the objective world. In order to skirt this dilemma, a positivism was arrived at which retained reason in its practical aspect but denied theoretical reason. Positivism must thus trust what it admittedly distrusts, which is an embarrassing and impossible position.

The appropriation and endorsement of practical reason

alone from all this is mental, predicated the irrationality of theoretical reason and of appetition. Thus what remained of the mental world seemed wilfully irrational. Voluntarism was but one more anti-rational, albeit logical, development of the empirical tradition, since voluntarism is the empirical approach to the mind conceived as certain distinct mental functions. Later developments of voluntarism at the end of the nineteenth century prove its essential unity with positivism, a union effected through psychology, which, as we have said, is an empirical approach, or the practical reason applied to the mental. Thus positivism is the only philosophical attitude possible to the modern mind.

Positivistic empiricism, seemingly rational, actually denying reason, accounts for the entire constitution of modern society, its technology and institutions. This emphasis on the practical yields astounding results, provided the end products be viewed singly and *in abstracto*; it is only when all its accomplishments are regarded in perspective that the tragic confusion and aimlessness toward any human purpose is apparent. And when human living is considered from the point of view of the satisfaction of all desires, the accomplishments of empiricism seem pitiful enough.

There are symptoms on all sides that the modern cosmology has reached the zenith of the possibility of its accomplishments and is already at the beginning of its decline. Never was empiricism more desperately defended, never was positivism more clamorous. Never has loyalty been more exercised and invoked for an obscurantism. To find a parallel for the acceptance of practical reason and the rejection of theoretical reason, we must go back to the defender of a natural and a revealed theology, Thomas Aquinas, and compare him with a modern apologist for the philosophy of "experience," like John Dewey. Yet despite the clamour of empiricism, faith is falling away from salvation by the control of physical nature, and also from subscription to irrational action. In the affairs of Western man, as empiricism is about to fall and nothing yet crystallizes to

take its place, confusion is the burden and despair sets the moral tone. In physical science developments have taken place which call for a departure from empiricism, the very emotional substance by which science was nurtured, and for which it seemed to stand. When this departure is realized, the whole modern cosmology will be abandoned, since science represents the august prime achievement of this cosmology, which even without interaction has been the hortatory symbol for the collateral development of common opinion. This is the final justification for considering the modern cosmology a scientific cosmology.

VI. CONCLUSIONS: HISTORICAL NECESSITY FOR A PARTICULAR NEW WORLD-ORDER

From our analysis of history, we have arrived at the general principle that reason and faith are indissoluble. Whenever a faith ceases to be rational, it disappears, and later attaches elsewhere; for it must have as its object whatever is considered at the time to be most real, whatever can so be rationally demonstrated. But the essential religious impulse of the craving for infinity which goes to make a faith, is impatient with *all* boundaries and refuses to be held down to what is finite.

Whenever faith and reason become separated in the course of the development of a world-order, those who defend the rational background from which faith has disappeared, beg and demand for it an unreasonable loyalty. This is proof that that world-order is coming to an end. The Hellenic world-order came to an end when the religious impulse was limited in expression by the faith in reason. The apologist for the rational background was Plato, who asked that reason be accepted as "revealed." There then arose a new world-order wherein faith was given to an incorporeal deity, whose worship allowed freedom to the religious impulse. This faith in turn demanded a rationalization, which was constructed for it by Platonism as interpreted by the scholastics. But the Christian

rationalization grew too rigid to permit the free expression of the religious impulse; from this rationalism faith therefore disappeared. The apologist for the Christian rational background was Thomas Aquinas, who asked that Christian theology be accepted as revealed. In the world-order which then came into being, faith was bestowed on the external world, a faith rationalized by nominalism which proved the external world to be alone real. This new rational background gave scope to the religious impulse, permitting for a while unlimited boundaries to man's aspirations. This was the modern world-order, which is in process of coming to an end because empiricism, the rational background of this order, eventually led to a delimiting of the religious impulse in that it showed the external world to be too finite. The apologists for this order are the modern positivistic empiricists, who ask that an empirically evident external world be accepted as "revealed." It is clearly evident that a world-order is now demanded which would have to construct a new rational background for the faith in entire man.

The philosophical statement of the rational background demanded would be a resolution of the truths expressed by old philosophies, seemingly irreconcilable, but integrated by the discarding of their fallacies. The rational background of this new world-order would have to recognize what is true of Platonic realism and what is true of nominalism; and reconcile the two, while discarding the delimiting fallacies of both. The efficacy of reason in dealing with the natural world would be explained by it. But it would have to agree with William of Occam that concepts are relative. They must therefore be continually made and unmade. It would have to resolve the dilemma posed by Hume, as to how reason can have any real application in a world of sense objects seemingly unrelated, thus resolving the dualism of the world independent of sense perception and the mind that perceives it. This would necessarily lead it to a complete reinterpretation of what science is and means. It would have to remove the vicious

emphasis of common experience on an external world; and re-establish the primacy of the essential religious impulse. It would have to reintegrate faith with reason and derive a hierarchy of values from the criterion of entire man.

From our metaphysics can be deduced the answers to these problems; in what follows we attempt their specific resolution.

What is true of Platonic realism is that universals are as objective and as real as particulars; what is true of nominalism is that such universals are not final entities but only hypostatized relations selected from an infinite number of possible relations. There is only one kind of reality; that shared by particulars and universals alike, a reality which denies all ontological dualisms. There is here implied no disagreement between realism and nominalism, inasmuch as universals are both objective and subjective. The fallacy of Platonic realism consists in its setting up of universals as ultimate, and thus assigning a secondary reality to particulars, which we have shown to be not of a different nature but simply of a different category of value. The fallacy of nominalism, conversely, consists in assigning primary reality to particulars, throwing a doubt on universals and consequently on reason. The first may be described as a too rigid intellectualism; the second as an unbridled irrationalism. Reason deals with a world susceptible to reason, because the mode of perception (which is rational) breaks up basic unity into discrete unities or particulars; and therefore these discrete unities, or particulars, are rational. In other words, discrete unity itself is the basic concept, and a particular only becomes a particular because of reason (that is, only becomes known through the application to it of universals). Although reason breaks up and distorts basic unity, it also pieces together and integrates by more and more inclusive meanings the world of experience, toward an approximation of this basic unity, although this approximation is symbolic, fictional, and ultimately unattaining. The measure of its approximation to basic unity is the judgment which

establishes the criterion of truth. Therefore no concept is finally true, but must be continually destroyed and recreated. No truth can be final; but falsity as the failure of sufficient inclusiveness is demonstrable.

It now becomes apparent that the dilemma as posed by Hume is not a dilemma at all, since such a world of sense objects, which, as he supposed, unrelatedly pass in panorama, is no true description of experience. On the contrary, all particulars, in so far as they stand in the knowledge relation, have necessary interconnections, through the use of universals, with all other particulars, and the present is not an instant in the meeting of past and future, but a category for expressing such relations as are apprehended as particulars. The world of experience is apprehended as both disparate and infinitely interconnected. There is then no knowable world independent of sense perception, and no mind existent as an entity into which such an independent world enters. But matter and mind are simply terms expressing the two ends of an experiential equivalence produced by the distortion of basic unity by self-consciousness.

If the world of particulars be a series of hypostatized meanings, infinitely interrelated, then a drastic reinterpretation of science is required. Science has dealt with this world as though it were independent of perception, and has discovered therein certain ideal invariant relations, and thus, excluding all else as mere mental interpretation, has set up the abstraction of quantitative relation as the structure of reality. Science has, by its unconscious metaphysical assumptions, selected only those relations which are conformable with a mechanistic interpretation; it has assumed that there is no purpose to be sought but only a strict causality. If we are to consider the world as quasi-independent only for purposes of experiment, we shall have to put back into it all the qualities other than quantity which have hitherto been excluded. Whether a qualitative science would be possible or no, at least such a re-establishment of qualities would make necessary a reinter-

pretation of the present findings of science by connecting them up with experience.

The reassignment of reality so as to accord to what is now termed "mental" as much reality as to what is now termed the "external world," would automatically remove the absurd and exclusive emphasis on the "external," and re-establish the primacy of the essential religious impulse. This reassignment would reconcile the eternally undaunted affirmation of faith with a rational background for that faith; and create a category of values based upon the appetitions of entire man.

THE TESTIMONY OF MODERN PHYSICS

i. IS SCIENCE INDEPENDENT OF METAPHYSICS?

We have already shown that science has been unable to escape the unconscious assumption of metaphysical principles. In Chapter I we demonstrated that those metaphysical principles assumed by science are logically untenable; in Chapter II we pointed out how they owe their start to an emotional bias, and how science was by them carried to a certain measure of success. In this chapter we shall show that recent developments in physical theory make it impossible for science to further utilize this metaphysics

In order to rationalize the new physical concepts, a fresh metaphysics is required, this metaphysics was always logically implicit in science; but up to the twentieth century, because the development of science had continued positivistically on the old metaphysics, its fallaciousness was not yet evident. We shall first examine the concepts of classical physics in order to make plain just what its subject-matter is. When this is done, the fresh metaphysics required will at once become plain and will in turn rationalize the concepts of the new physics.

We must state here definitely that we are not scientists, nor do we attempt to criticize science from a professionally scientific point of view. We assume that modern physicists have not made any error in method, nor failed to apply every check, however arduous, to the integrity of their theories and formulas. It is, however, when these physicists attempt explanations of what their research means in terms of philosophy and common experience, that we take issue with them. Science is primarily answerable to philosophy; and we can in no wise concur with Einstein when he says that "all true philosophies agree with the established results of physical

science."¹ If by this he means that philosophy must undertake to explain the concepts of science, this is a platitude; but if he means that philosophy must accept as its basis the current conclusions of science, then he is claiming for science some private approach to truth, inaccessible to the uninitiated. This claim can never be allowed.²

Not only does Einstein here voice the opinion of scientists generally that philosophy must be dependent upon the findings of science, but he also shares the superciliousness of all scientists with regard to the value of metaphysics. This studied indifference has a long history, dating from the *hypotheses non fingo* of Newton. Science in fact pretends not to be interested in the application of its concepts to common experience, but we believe this attitude to be disingenuous and untenable. Science perforce began with metaphysical assumptions, though these have been largely unformulated and unacknowledged. It must be patent to anyone, that in defining its subject-matter, the scientists must have some conception of what they are concerned with; surely their labours must have some connection with what they consider reality. But so much for their premises. As to the structures they erect on these premises, are they not explicable in some manner in terms of what is real? The sheer truth is, that from Newton on, scientists have always surreptitiously touched metaphysical

¹ Morris R. Cohen, *Reason and Nature*

² Consider for a moment that physics has a message comparable to philosophy. What has it had to say, taken at its own word, about the nature of reality? Physics started with nominalism, the consideration of the particular as alone real, but it has lately swung around to a subjective idealism. Vide Eddington, *The Nature of the Physical World*, and Jeans, *The Mysterious Universe*. Nominalism and subjective idealism are old philosophical attitudes, not new methods of attack upon the problem of reality launched through physics alone. If physics cannot find a position at all surer and more final than has philosophy, then what has physics added to the proper understanding of life? Our answer is that physics cannot be expected to deal with ontological problems, when it seems to do so, it is merely usurping the domain of philosophy by means of old philosophical concepts.

hypotheses; for if they had not, science would be like the second story of a house which is without foundations or inhabitants, with no connection below and consequently no access. No doubt their field proper may be considered as in quasi-isolation; but scientists, being men, are unable to remain in such diabolical abstraction, and so they push their explanations forward with mock apologies, always prepared to retreat under the prerogative of *hypotheses non fingo*.

But let us accept for a moment the scientists' own statements of their position. Let us pretend that we believe them when they say they have nothing to do with metaphysics; let us accept Meyerson's own word that "the explanatory part of science is only a parasitic growth."³ Let us also accept the statement that science is not concerned with furthering practical ends, or with serving common experience in any manner. The question then arises, with just what end *is* science concerned? For some scientists science is the pursuit of human good; but when we remember that the result of science is not necessarily human good, and that the scientists are not concerned with human good but only with the *pursuit-of-human-good*, we must insist upon rejecting this declaration of what the aim of science is. Is science, then, merely a difficult and fascinating pastime, indulged in by a few laboratory recluses, as some scientists would ask us to believe? We hold too high an opinion of the function of science ever to accept the scientists' own evaluation of themselves and their work. But obviously this is mock modesty on their part, and it must be that the scientists are convinced in their hearts that science alone is competent to engage in the quest for reality. Perhaps we can better elucidate the relation between science and reality by an examination of what the physicists themselves consider their subject-matter to be.

³ Emile Meyerson, *Identity and Reality*.

ii. THE AVOWED SUBJECT-MATTER OF CLASSICAL PHYSICS *

Classical physics states and believes that its subject-matter is the external world, observable by man, yet independent of, and indifferent to, man's existence, in which man is merely one of the observable phenomena. The fact that man is also the observer does not signify anything for physics. Physics employs as a starting-point the common-sense world of identities in time and space; and without preconceived ideas it approaches this world as an irrational. Thus far it is empirical and its method that of empiricism. It discovers, however, that not all empirical aspects of the world can be considered objective; and therefore it retains as its subject-matter only those aspects about which there is universal agreement on the part of all observers. Wherefore *sensa* and change are excluded and the motion of unchanging particles in space is retained. This abstractive method yields a world of brute facts which are beyond denial. Physics then proceeds by inductive reason to a correlation of its now defined data; for without reason scientific observation would yield nothing. "This demand for an intellectual justification of brute experience has . . . been the motive power in the advance of European science."⁴ The nature of the approach to the physical world as a brute fact forces induction to an explanation not by purpose but by cause; but all scientific cause is found to be necessary cause from an examination of undeniable facts. Also such an approach predetermines an analytic explanation, since the explication of how the datum under consideration came to be just what it is and not otherwise involves an analysis of its eventual ingredients, which analysis leads back into the past in an endless chain of causal regression. Thus analysis is bound up with efficient causation; and synthesis is excluded when final causation is excluded. So classical physics arrives at its laws of causality, which are experimentally checked against all known phenomena. These laws, once accepted, can

⁴ Whitehead, *Process and Reality*

be formulated mathematically; and from these mathematical formulas can be deduced corollary formulas and conclusions. The mathematical formulation is accepted by physics as its ideal aim and as the most complete expression of the manner in which the world of nature behaves.

III. OUR CONSIDERATION OF THIS SUBJECT-MATTER

A résumé of the intentions and aims of physics shows them to be incomplete, confused, and inconsistent. Its first mistake as to what its subject-matter is arises from its belief that it is dealing with a world independent of perception. We have shown in Chapter I that there can be no knowable world independent of perception; and that therefore the world that empiricism acknowledges is the world of percepts. So much physics might concede, with the objection that this is mere metaphysical quibbling and does not affect their investigations. But does physics deal with this perceptual world of common experience? Of course it does not; for its subject-matter consists of certain concepts abstracted from a totality of perception: primarily, identity, motion, and measurements of space and time. This abstracted subject-matter is arbitrarily purified of all things in common experience which are not susceptible to universal agreement. Identity and motion by themselves could not yield a science of physics; the essence of physics is the measurements of these fundamental concepts. Thus physics is nearly altogether concerned with operations of measurement; and its concepts are hypostatizations of such operations. For example, the length of a table is procured by the operation of laying a foot-rule upon it; and length in physics in this case can mean nothing but the operation. It should be clearly understood that the result obtained in feet is not a judgment about the length or shortness of the table, but merely a concept derived from this operation and not strictly a quality. The fact that the concepts of physics are purely operational has been ably brought out by Bridgman in his *Logic of Modern Physics*: "In general, we mean by any

concept nothing more than a set of operations; the concept is synonymous with the corresponding set of operations.⁴ Bridgman has hit upon an idea which is more general in application than he seems to suppose; for the theory of operational concepts has its most valuable application in common experience, and indeed clarifies the relation of physics to common experience. As shown in Chapter I, basic unity is broken up into fictional entities of more or less hard crystallization of meanings, which at once deny and affirm continuity. These crystallizations (concepts) are in themselves a necessary convenience of reason in dealing with a set of operations, performed or conceivably performable.

When it is understood that physics principally deals in operations of measurement, in a world from which all other meanings have been removed, it will immediately be apparent that physics is non-empirical by its very nature, that is to say, if empiricism be understood as accepting the facts of the perceptual world without selection or prejudice; for considered as a "brute fact," for instance, *blue* is as insistent as *extension*. Because the perceptual world has been considered as a set of brute facts, that is, facts essentially irrational, there has arisen the notion of an objective world as a world independent of reason. All percepts, it is true, must be considered objective for the operation of an experiment, but this attitude easily leads to the judgment that all the objects of experimental operations are in an independent world, but such a judgment is false and illogical: the term, objective, has no meaning except in the subject-object relation. "From the operational point of view it is meaningless to attempt to separate 'nature' from 'knowledge of nature.'"⁵

The world of "brute facts" then turns out to have been all the while the world as interpreted by cognition; and of this world physics takes cognizance only of certain seemingly undeniable aspects. This amounts to a statement that the objective world must be not a set of irrational facts but

⁵ Bridgman, *The Logic of Modern Physics*.

naturally rational. To separate reason and nature is to pose a problem which should never have arisen and one which has been a source of great confusion in the understanding of what science is. If this had been sufficiently understood, physics would have been able readily to answer the logical objections of Hume, as to how reason could be effective in an irrational world. Universals exist in the objective world in so far as the objective world is made manifest through universals, which are its *sine qua non*. The seemingly undeniable truth of mathematics, as applied to the objective world, proves that the objective world is a composite of universals. Mathematics is wholly dependent upon the basic concept of discrete unities, about which there can be no disagreement, since on this concept depends all consciousness and reason.

Moreover, there is concurrence of physical measurement because it is agreed that some arbitrary measurements are absolute. A one-foot rule, or an hour, for example, are as long or as short as your judgment of value demands for a certain occasion. But obviously, for purposes of comparison, it has been agreed to consider measurement in a certain absolute manner. Thus the truths of mathematics and measurement are absolute and undeniable only because it has been decided to so consider them. Physical and mathematical concepts are complicated analyses of truisms, extraordinarily useful, but in which all possible conclusions are logically demanded by the premises.

Mathematical measurement is the chief tool of physics. Why have not colours, sounds, odours, etc., been dealt with by physics in the same manner as extension and motion? Simply because physics, as we have shown, excludes all questions of value and demands an operational agreement. Colours, sounds, and odours, are not susceptible to operational standards; and therefore, since no exact agreement as to them can be reached, they are thrown out as subjective appearances or "sensa," and thought of as effects caused by measurable relations. Thus sound is supposed to be the psychical effect

of "real" physical sound-waves; colour the psychical effect of "real" measurable electromagnetic waves, somehow] conceived as independently existent, etc. There must be some significance in the fact that in physics some senses are given preference over others, that touch and vision (excluding colour-vision) are considered safer and more "real" than other senses; and this is because they are the only senses yielding the concept of extension. An operation of measurement is concerned exclusively with extension and motion; it must involve the sense of touch and the sense of sight. Colour is a quality which does not seem to affect spatial measurement; therefore it is dropped by physics. There must be no confusion, in regard to the use of the senses, between the concepts of physics and the experiments performed to check or verify these concepts. Thus notes may be employed to test the theory of interference of sound-waves, and hearing is of course involved in the experiment; but the physical theory is stated in terms of sound-waves in motion and contact, a visual-tactile presentation. Physics unwittingly accords reality to the evidence of some senses and excludes the evidence of the others as sensational effects, and by so doing makes a metaphysical division into the physical and the mental. It need hardly be pointed out that there is no valid criterion for such a division; but it is made merely on the prejudice in favour of what is useful to measurement.

From the above it must be obvious that any assertion that physics is concerned with ultimate reality as against the reality of common sense is unfounded and false. The highly abstract world of physics is valid for a certain purpose, the certain purpose being the examination of that which is discrete with a view to eventually serving common experience. As we pointed out in Chapter I, discreteness is approached only at the expense of significance; and conversely, significance is approached only at the expense of discreteness. But only through the greatest inclusiveness can significance be symbolically approached; and this is a further proof that science,

which does not deal in inclusiveness but in discreteness, can never touch the significant but rather recedes into the higher and higher discrete abstractions of pure mathematics.

An important point in the understanding of what physics is, consists in the fact that all value is excluded; *sensa*, which are values, are therefore necessarily discarded; and time, which is the category that deals with value, is also necessarily discarded. The judgment of value, which is not susceptible to general agreement, is the persistence of certain identities as against others which do not persist, and this judgment is time. The concepts of physics admittedly have no relation to human values, and are consequently atemporal. The sole exception is the second law of thermodynamics, with which concept physics finds itself rather embarrassed.⁶

Physical concepts, then, stripped of all values, are by origin undeniable, and any induction made from such concepts must yield laws by definition beyond appeal. Consequently, strict causality *must* rule the physical world; but this sort of determinism, as we have shown, is forced by the logic of the very definitions of physics. These laws of causality are truisms, valuable as many truisms are, with valuable corollaries, not always so apparent, which are capable of giving practical results. However, it is absurd to assume that they are coercive laws of nature, operating on and affecting human volition.

Physical science, we have stated, is essentially rational, although it approaches its subject-matter as though that subject-matter were irrational. It thus forbids any generalization or hypothesis which presumes a purpose or direction, and concentrates its attention on an analysis of the event in order to determine how that event came to be what it is. Any induction must then inevitably concern efficient causes, which means finding the constituent elements which have been added to form the event and the "forces" which brought about their union. This event will then appear to be explained by a locked chain of causes and effects leading backward into

⁶ See footnote to p 55

the past. Thus the inevitable attitude of a reasonable approach to the irrational yields mechanism and analysis; analysis is bound up with efficient causation.

Physics seems to exclude purpose, or final causation, and synthesis. It was because Aristotle approached the natural world as essentially rational that he necessarily employed final causation as an explanation; this led him away from an analysis of the constituents of his datum, but toward a synthesis. He attempted to discover which way phenomena were determined to go, modern physics attempts to discover how they were determined to be what they are. Aristotle looked toward the future, modern physics turns to the past. But modern physics must concentrate on an explanation by analysis. Yet analysis by itself yields nothing, it is valuable only for its use in purposive synthesis. It is well to understand the analytic properties of bricks, for instance, since this knowledge helps to determine their use in construction, but it is absurd to infer that the properties of a brick altogether determine the construction of the building. There is always an element in any synthesis besides the analysable elements, namely, the arrangement or organization of the analysable elements. Again, the arrangement of atoms in a molecule has as much to do with the resultant substance as the *kind* of atoms which make up the synthesis. As Morris R. Cohen puts it, "in the terse language of mathematics, not all elements in nature form addition groups"⁷ This much science must admit, even though it chooses to ignore all synthesis.⁸

The question then arises, does physics succeed in discarding the category of purpose, or does it only put purpose out through the front door in order to let it in later through the back, under the guise of causality? An observation and a description of natural phenomena would be practically non-purposive, but it would yield no science of physics. It is only

⁷ *Reason and Nature*.

⁸ The concept of entropy is an exception to this statement, since it deals with organization, and consequently with synthesis.

when reason conjoins and assembles these disparate facts that any progress in science is made. A scientific hypothesis is a direction or purpose read into a situation by the observer, and checked by experiment to determine whether phenomena will answer to this purpose. Thus physics introduces principles of explanation from the outside, in no wise more inherent in observed data than final cause which had been dismissed because it was *not* inherent in observed data. Both causality and purpose are, therefore, two different attitudes to which phenomena answer; they are concepts to which the natural world responds because it is conceptually constructed. "The chances are, therefore, that the relations between phenomena will be found by those who are previously convinced that the relations exist"⁹ Or again, as Poincaré pointed out, ". . . to wish to experiment without preconceived ideas would be to render all experiment sterile, and, moreover, it is impossible to free oneself from ideas of this kind"¹⁰

What is purpose? What, if not aim or direction selected out of all possible aims or directions? Physics cannot avoid purpose, since causality is a necessary aim or direction. Given the cause, the effect must be determinate. A determination is a purpose, and no laws of physics escape it in their ideal formulation. For example, when the statement is made that all bodies continue in a state of rest or motion in a straight line unless acted on by outside force, the purpose, aim, and direction of bodies are assumed.¹¹ The entelechy of Aristotle is not escaped; but by dividing an event into tendency and contingency a formulation in mathematical terms can be arrived at. Causality is the consideration of an event as being a unity at the mercy of some purpose external to it; whereas with Aristotle the purpose was inherent in the unity. The advantage of splitting an event into two parts is to give a

⁹ Bridgman, *The Logic of Modern Physics*

¹⁰ Report to the *Congrès Internationale de Physique de 1900*

¹¹ Thus mechanism cannot escape teleology. A machine is a purely teleological or purposive affair. *In abstracto* a machine is not a machine, but merely a meaningless conglomeration of materials.

measurable function to the purpose. In physics, purpose is labelled force. We said in Chapter I that whenever a unity is considered as one, the result is classification; considered as two, cause and effect. Aristotle arrived at classification; modern physics, at cause and effect. If it be asked whether there can be a valid science erected on the category of purpose (that is, without causality), the answer is that there cannot be, for it is the express design of physics to formulate its laws mathematically; and without causality, only classification would apply. This is, however, not to state that a study of physical phenomena should not be attempted with the synthetic method. Causality as employed by physics yields something narrowly useful; purpose as employed by philosophy yields an integration of the subject-matter of physics with the rest of experience, which might possibly prove valuable to the study of physics, in spite of the physicists' too loudly professed disdain of metaphysics.

IV CONCEPTS OF CLASSICAL PHYSICS

This synthetic or philosophical survey of physics is what we are attempting. From a philosophical point of view, physics is concerned with a measurable analysis of the objects of knowledge, and no more breaks through experience into another reality than does common sense. This will be clear from an examination of its primary concepts.

Matter is defined by classical physics as the constituent of the physical universe, having extension, impenetrability, and mass, and capable of being acted upon by energy. There is no part of this definition which does not correspond to the common-sense understanding of a tangible identity, that is, of an identity as a thing which continues to be its extended self through spatial and temporal change. Moreover, it must be itself and not anything else, therefore it must be essentially discrete, cut off from all else, and so impenetrable. In common experience, when an identity moves, it is moved by something other than itself, that is, by a force. In short, all qualities

*which are ascribed to matter can also be ascribed to common-sense tangible identities. Let us re-examine the separate elements of the classical definition which we have shown to be that of common experience. Extension means occupancy of space, spatial position. But if we examine what we mean by spatial position in common experience, we find that it is reducible to what is touched here-now. It is true that spatial position is assigned to what can be seen, heard, smelled and tasted; but except in the case of vision, such spatial position is vague and acknowledged fallible. In the special instance of vision, the judgment is made of the spatial position of an identity not immediately tangible, that is, the judgment is made of *there-now*, by which is meant a potential *here-now*, or in other words, if what is *there* were *here*, it could be touched. The certainty of this judgment is based on prior experience where it concerns mundane objects; what is assumed, however, without warrant, is that position remains a property of what is *not* touched, which is to say that it retains measurement as a quality. For in what way can an operation performable on an object be properly said to be a quality of that object?

Spatial position is evidence of what we have termed *prime phases*, those fictional abstractions of basic unity necessarily impinging on and habitually threatening the form of being. They are hypostatized into entities, which are interpreted by the sense of touch as resistant. Position in its last definition means *tangible* relations.

These hypostatized relations, called objects, are necessarily discontinuous, and cannot be penetrated without mergence and the corresponding loss of identity. This constitutes the "quality" of impenetrability.

The physical term, mass, is a combination of the concepts of extension and impenetrability.

Inasmuch as prime phases have been shown to be entities which offer resistance to the form of being, force is that resistance. However, the distinction between an object which resists and the resistance of that object, could not have been

made by the sense of touch alone. A man with only the sense of touch would make no distinction between the objects that touched him and the sensation of touch itself; for when the object was not touching him, he would be unaware of its existence; and each time the same object touched him he would conceive it as a new identity; he would not be able to integrate tactile patterns, and thus the idea of continuity could not occur to him. Each object would seem discontinuous; and an object would not be divided into object and resistance. With the aid of supplementary senses, particularly with the aid of the sense of sight, because identity continues to attach itself to an object which is no longer touching, motion becomes a concept. Thus the identity of the object remains, and the concept of the object becomes separated from the concept of resistance. The retention of the concept of identity, when the pattern changes from here-now (touchable) to there-now (non-touchable) or *vice versa*, accounts for the origin of the concept of motion; motion integrates discontinuous patterns and yet holds on to identity. We have said that when an object is touching it offers some resistance, but a counter-resistance is required in order to make it cease being here-now and become there-now. This presents itself as the tactile sensation of tension, and thus the explanation of motion, when identity is retained through the addition of vision to touch, must appear as a push or force acting on an object, even when that object is no longer here-now. This is the concept of energy, primary in physics, and positive, although fundamentally undemonstrable as existent; whereas the concept of matter seems demonstrable but negative. In other words, the important problem is not what resists but how intense the resistance is. With the measurements of matter and energy, the whole of mechanics is concerned, and all other branches of physics are also approached from the point of view of these two concepts.

The measurements of matter and energy are in terms of space- and time-intervals. In physics, this means standard

intervals, such as years, hours, seconds, etc., and miles, mètres, inches, etc. Physics uses these intervals, accepted as known, to make comparisons with mathematical exactness between identities and between motions. But what meaning is attached to these standard intervals in themselves? How long is a foot; how long an hour? Can these be defined except in terms of themselves? The length of these intervals has been arbitrarily established by universal agreement, and this is the only meaning they have. Space and time measurements are operations performed in terms of such standard intervals.

We have seen in our discussion of time that no meaning can be placed on its content, since it has no content but is a way of comparing the endurance of identities. Therefore, time has no meaning except as finite; and *infinite* time is equivalent to *no* time. But a time-interval has a sort of meaning because it refers to a certain beginning and end of the movement of an object in space conceived as unending. The earth is the frame of reference from which this motion is defined; that is, the earth is in a state of rest and all motions by which terrestrial time may be gauged are defined in reference to it. A time measurement is the operational comparison of the motion of objects where one interval is known only as agreed on (i.e. its termini are known and its content unknown) and the other interval unknown. An hour has a definite meaning only in terms of space to determine a time-interval it is necessary to define the termini of the motion of an object in space, as, for instance, an hour observed on a watch.

In the case of space, the meaning of its content is perfectly plain, inasmuch as the concept of space arises from the perception of objects, the termini of which are pure logical negation. But space cannot be conceived as limited, because it cannot be conceived as beginning or ending. A space-interval has a sort of meaning because it refers to an arbitrarily agreed beginning and ending of the movement of an object in finite certain time. A space measurement is the operational comparison of the motion of objects where one interval is

known only as agreed on (i.e. its content is known and its termini unknown) and the other interval unknown. A foot has meaning only in terms of time: to determine a space-interval it is necessary to define the content of an object in terms of time, as, for instance, the space contained on a foot-rule. The content of an object in terms of time signifies that the extension of an object can only acquire meaning through motion of some sort; and it is the velocity of that motion which yields the concept of its extension. This motion employs for definition the earth as a frame of reference; that is, the earth is in a state of rest, and all motion by which terrestrial space measurements are made are defined in reference to it. As we noted in Chapter I, an inch, for instance, attains meaning only through the familiar motion of the eye in covering it. Clearly, neither space-interval nor time-interval has a meaning except in terms of the other; and they are the co-ordinates of motion.

Space- and time-intervals are both products of the senses of sight and touch. To begin with, the concept of extension could never have arisen without touch and sight, because, as we said, no idea of an object as separated from its touch could have arisen without vision, and thus continuity could not have been conceived. The concept of the continuity of an object when it was not here-now could not have arisen without vision; and this amounts to stating that the concept of motion is an impossibility without vision. A space measurement is made by contact or by inference from contact, and is always in terms of here-now. A time measurement is made by vision or by inference from vision, and is always in terms of there-now. But there-now, as we have said, is a quasi here-now; that is, the possibility of touch is assumed.

This analysis of the concepts of classical physics has revealed that physics has never attempted to explain the nature of reality, but has only set forth the logical relations deducible from certain invariably defined concepts. These concepts are operations of measurement and are strictly confined to mathe-

mathematical formulations. Theoretically, all laws of physics are logically contained in, and deducible from, the first definitions with which physics started.

V. THE RELATION OF PHYSICS TO OTHER KNOWLEDGE

To define physics as an exhaustive analysis of the logical implications of a certain set of truisms, is not to deny its validity. The same statement may be made about mathematics; yet mathematics is undoubtedly invaluable and, perhaps, the most useful human invention. Within its self-imposed limits, physics has access to a certain body of truths. "... [physics] is not a statement of the actual history of the ultimate Reality, but is a convenient method of considering certain facts apart from others."¹² As we have before stated, the purpose and function of physics is the examination of discrete elements with a view to their eventual usefulness to common experience; and this examination naturally precludes what is extraneous to it. This statement is so obvious that it could only be construed as an illogical attack on the position of physics to assume otherwise. It is a platitude to state that when a tailor measures a customer for a suit of clothes that that customer's disposition, colouring, reputation, habits, etc., are all excluded because they do not relate to the special practical end to be achieved. Nevertheless, in the long run the end to be achieved, namely, the proper attiring of the man, has relations in some degree to all excluded elements, and indeed to the entire man. And so physics, too, excludes all extraneous elements in order better to serve them in the long run.

The ridiculous error of concluding that physics is a description of another reality as opposed to the appearances of experience, arose from the fallacy of vicious abstractionism; for physicist as well as common man persist in regarding physical concepts as entities or qualities, in an absolute sense, instead of as products of relative operations. Space and time are thus considered as entities, instead of the manner in which

¹² Bradley, *Appearance and Reality*.

perceptual entities are measured by an operator; mass and extension are considered absolute qualities of an object, instead of the method by which the object itself is measured. The constant usefulness of these concepts has hypostatized them to the point where they are as familiarly accepted as are shoes and bottles, and common sense would only reluctantly give them up.

But apart from the analysis of the concepts of physics which we have undertaken, it is plain that the body of physical theory is in no sense an inventory of the objective world. As Meyerson says, "complication of auxiliary hypotheses and of construction become enormous without representing in a satisfactory manner even the simplest phenomena."¹³ Furthermore, if physical realism is valid, then what are other levels of science dealing with? Apparently not with reality at all, but with configurations, i.e. appearances "He [the scientist] in supposing that he was talking about reality ignored multiplicity of scientific levels of analysis, as represented in the co-existence of such sciences as physics, chemistry, and biology."¹⁴

The error of imputing reality to physical concepts alone has had dire effects. To consider the abstractions of physics alone real is to cast the slur of unreality on all essentially human things, and to cause them to be considered illusory or imaginative as inhabiting a limbo which is indescribable in any rational sense. Colours, sounds, sensations of pleasure and pain must, according to this, be considered not strictly important at all. But the fact that physics discards values in its investigations must lead the physical realist to a disdain for all values; he is of necessity impelled to believe that ethical and aesthetic considerations are futile, fatuous, and superficial in the extreme; at best he must concede that ethical and aesthetic judgments are a matter of individual taste. Thus perhaps the worst effect is that physical realism endows the

¹³ *Identity and Reality*

¹⁴ Ginzburg, *The Adventure of Science*.

world of matter with sole reality, the supreme metaphysical category. Consequently, the inexorable religious impulse, which always strives to attach itself to what reason considers real, must attempt to fasten on to the world of matter alone and make of it an object of worship. Thus matter is freighted with a weight of significance which it is unable to bear, and the object of worship is turned into an object of contempt and hatred. From the chaos thus brought about, there is no turning; for the division of the world into mind and matter precludes any integration of the subjective and objective aspects of reality.

Physics is as valid a description of reality as poetry, for each deals with only one aspect. Both are symbolically true, but neither is absolute; physics deals in relations which are more discrete (abstract) and less significant, poetry deals in relations which are less discrete and more significant (concrete). The abstract world of physics is comparable to the "world of fashion" where style trends and tendencies may be spoken of as the movements of entities without considering them aught but useful fictions. That scientific concepts are also useful fictions seems a strange assertion to modern man, who is nevertheless inclined to regard animism, the hypothesis of a nature peopled with spirits, as an amiable joke. Being familiar with our modern spirits, we overlook their mystery: spirits or "forces," like electrical tensions, cosmic rays, and photons, which people our physical world but whose nature remains as undemonstrable and heuristic as hamadryads and genii. The conversion of magnetism into electrical current could just as well have been explained by Faraday by an assumption that the spirit of the magnet becomes angry when disturbed, and rushes out in such and such a way. The gain through the scientifico-modern attitude is just this: no emotional or religious considerations are allowed to inhibit speculations and experimentation, since the whole realm of physics is taken by itself to be an independent realm. But pathetic aspects of nature are thereby lost sight of. Thus

an explanation that life is nothing more than the maintenance of alkalinity in the body is supposed to evaporate all mystery and to bring us down to the reality of hard stubborn facts, as though alkalinity were an ultimately understood condition instead of a favourite abstract way of stating another mystery, a finally non-understandable relation of being. Poetry presents a synthesizing function, by gathering together the broadest and most ordinarily dissociated aspects and values; and so is the most concrete expression possible in language. On the other hand, poetry slides over or ignores the simplified analytical aspects of its subjects.

“With delicate, mad hands, behind his sordid bars,”

says Ernest Dowson Obviously Dowson is not trying to resolve the interior relations of hands, nor is he strictly interested in hands at all except as “mad hands” can introduce relations and values beyond themselves The phrase “mad hands” immediately gathers together innumerable meanings, which make single objects more concrete than even common experience could The point we wish to stress in the comparison of physics and poetry is that the conceptions of poetry are exactly as real as the conceptions or entities of physics, though each is separately valuable for certain purposes of common experience. Both are true and fictional; therefore neither can be a final description of reality

VI. THE INTRODUCTION OF NEW PHYSICAL CONCEPTS

With the advent of quantum mechanics and relativity the twentieth century has witnessed a revolution in physics. The revolutionary element in the new physics does not consist in a new or larger application of the laws of classical physics so much as it constitutes an abandonment of the metaphysical implications of the old concepts. This is no mean accomplishment, inasmuch as it amounted to a dissociation of the metaphysical implications which had clustered around the

original pure concepts. We must note here that the greatest service rendered by the new physics has value to all departments of thought, but was unconsciously performed. The redefining or purification of concepts is most plainly exemplified by the relativity theory where the key idea as conceived by Einstein was not strictly physical but metaphysical: the explanation of the null result of the Michelson-Morley experiment by a re-examination of what was meant by the concept of position. The quantum theories have upset the traditional understanding of motion as continuous, and, consequently, of the concept of identity itself.

That the ordinary interpretation of these familiar concepts no longer seems to apply, has left physicists at a loss to explain what these theories mean in comprehensible terms. When questioned too closely, they admit that language can only serve to give vague analogies, and that the only clear statement of the new physical theories must be made in mathematical terms. But this is an intolerable situation and one which cannot be admitted, for if the equations are to give understandable results in common experience their symbols must have represented something understandable in the very terms of common experience. Mathematical symbols, if they ultimately rest on common experience, must be returnable to it, unless mathematicians wish to be considered as merely doing finger exercises. The new physical concepts can and must be rationalized and made to check with common experience.

But obviously the rationalization of the new physics cannot be attained by attempting to hold on to the old metaphysical interpretations of physical concepts. Yet the new physics, which was enabled to get its start by the overthrow of some of the old metaphysical beliefs, is in the peculiar position of trying to retain as much as possible of the old beliefs while undertaking the rationalization of the new. For example, *matter*, in its old meaning of *substance*, has been replaced by the emanation of energy from a point; but energy is the old

concept of *force acting on matter*. This tautological definition leaves energy undefined. As Bridgman points out, "energy is not a physical thing, but rather what we would call a property of a system as a whole."¹⁵ This illustrates how, by cutting off one of two complementary concepts and retaining the other, no meaning can be attached any more to the one retained. Thus the explanation of the new physical concepts appears not only to violate common-sense notions, but at the same time fails to fit in with classical physics. The trouble is that the redefining or purification of physical concepts has not been drastic enough, and the prevailing confusion as to what the new theories mean is proof of this. So with apologies to the effect that physics is unconcerned with metaphysics, which is to say with anything beyond its realm, the physicists blithely proceed with muddled metaphysical explanations, ranging from the "mind-stuff" of Eddington, and the Pythagoreanism of Jeans, to a kind of attenuated atomism ("minimal events") as postulated by Russell. One thing clearly emerges from these attempts, that the old-fashioned realism which believed in a physical world made up of extended particles in motion has been definitely abandoned and in any case would have no meaning, since matter has lost its substantiality and is no longer a final concept in physics. Thus mechanism is superseded, absolute space having gone the way of matter; for these are the two concepts by which mechanism was defined.

VII. NO TRUE HIATUS BETWEEN OLD AND NEW PHYSICS

The method of explanation of the new physics in terms of common experience lies through the proper understanding of the old concepts, and their interpolation into the new findings will clear up many difficulties. Provided all these concepts are clearly understood in their original intention, there will be seen to be no true gap, as is now believed to

¹⁵ *The Logic of Modern Physics*.

exist, between the classical and the new physics. This means that the old metaphysical assumptions attached to classical concepts, which are still partly retained by the new physics, must be stripped from these concepts.

If our explanation of the subject-matter of classical physics is correct, namely, that it does *not* consist of absolute qualities or entities but of operational concepts of measurement, then the resolution of the dilemma lies before us. This leads us to an examination of the new physical concepts, and to an interpretation of them in terms of our explanation above of what physical concepts strictly are.

VIII. RELATIVITY

It is a common observation that motion between two bodies is relative. When two automobiles are travelling side by side in the same direction at the rate of 25 miles per hour, they are stationary in relation to each other; if one is travelling at the rate of 25 miles per hour and the other at 30 miles per hour, the one that is going 30 miles per hour is only going 5 miles per hour in relation to the other. Common sense, however, assumes that the true rate of speed is the one in reference to the earth; and so the automobile is not conceived as "really" going 5 miles per hour but 30. Here the earth is made the absolute frame of spatial reference. What relativity denies is that there can be any absolute frame of reference; for the earth does not qualify as a final frame of reference, since it has no absolute position which could be defined without relation to other bodies in the universe. This is equivalent to stating that position is only relation between bodies. And when the spatial relation between bodies changes, it may be construed that either body is moving and the other static; but the common construction is that the body in terms of which the relation is established is static. Thus when in motion, a man observes things going by him and himself stationary; although he conceives the situation oppositely,

because he has agreed to accept the earth as the frame of reference.

But motion is measurable in space- and time-intervals; and thus space- and time-intervals will vary for the observer according to the relative motion between his frame of reference and the bodies in motion relative to that frame of reference. In order for these measurements to be determined, some standard of measurement must be fixed. The speed of light is so selected because no known method of signalling exceeds it. The speed of light is thus made an invariant for every frame of reference, regardless of its motion to any other body, from the point of view of the observer. It therefore follows that the same event signalled by light (which is the only method of signalling across interstellar space) will have different space and time readings for bodies moving at different relative velocities to the signalling body. Thus the notion of absolute distance and the notion of simultaneity are meaningless as absolutes. An event has a determinate space- and time-interval, but the date and length of the intervals are variously determinate for the observer according to his frame of reference.

The acceptance of this theory leads to corollaries which seem bizarre to common sense. It is hard, for instance, for common sense to accept the relativity of the concept of simultaneity. that two events at a distance from each other which occur at the same time, according to the clock of one observer, will follow or precede each other according to the clock of another observer who is travelling at a different rate of speed. It is equally difficult for common sense to accept the idea that there is no cosmic time in the same sense in which we conceive time on the earth. The making of the speed of light the sole invariant and the critical speed for anything capable of being used as a signal, carries the corollary that as an object approaches in velocity the speed of light, its mass increases to infinity, its length decreases to zero, and its time is retarded to zero intervals. This action, however, is minimal for speeds

not approaching the speed of light. Thus, by definition, nothing capable of being used as a signal can travel as fast as light; and so the past is irrevocable and there can be no causal relation between events separated in space, unless light travelling from event *A* could reach event *B* before *B* occurred. The old physics postulating matter in three dimensions extended in space and instantaneous in time passes; and in order to determine an event four dimensions must be utilized: three of space and one of time. For the dating alone of an event would have no unambiguous interpretation; and neither would the spatial or temporal measurements alone mean anything definite.

We are not concerned with the physical aspects of the special theory of relativity, by which is meant its applicability in the field of physics, but only with what it means in terms of common experience. The special theory is a formal and mathematical method of dealing with certain concepts in a consistent way. This means that it is not a statement about reality, but only about a certain set of abstractions and how they are connected by definition. Therefore let us examine what is meant by the concepts in terms of which the theory is stated. These concepts are *frame of reference*, *motion*, *simultaneity*, *space-intervals* (e.g. metre rods), *time-intervals* (clock time), and the *speed of light*.

Frame of reference. There is only one naive frame of reference possible: that which is here-now for one observer wherever he may be. And naive experience must be followed in this; for if there be relative motion between the observer and anything else, it is never the observer who moves, but aught else moves by him. There is only one naive frame of reference; but the earth serves the function of a hypothetical frame of reference for the here-now of more than one observer.

Simultaneity. This has no meaning except when the occasion of more than one observer has the same here-now. Thus for one man to wonder what another at a distance is doing *now*, has no meaning, except as an imaginative transposition to that

other's here-now. The judgment, there-now, is, as we have said, a transposed here-now, by virtue of the sense of sight. Thus through inference from signals, a quasi here-now can be established between two observers separated in space; and when watches are synchronized, this is what is done.

Motion. Motion is the judgment of whether an object is becoming more or less here-now for one observer. How is this judgment made? The judgment of motion of an object is made by vision where the identity of the object is conceived as persisting. In the case of rectilinear motion in line with the angle of vision, the pattern of the object does not change internally, and the judgment of motion is based on the symmetrical expansion or contraction of its size in relation to a frame. In the case of rectilinear motion not in line with the angle of vision, and in all other kinds of motion, the judgment is based on the asymmetrically changing pattern.

Space- and time-intervals Time for one observer is the realization of the endurance of identities; and has no unambiguous meaning for more than one observer. A time-interval has no useful meaning for one observer, for more than one observer it is an arbitrary segment of time, expressed by movement over space. Space for one observer is whatever can be seen and touched, and has no unambiguous meaning for more than one observer. A space-interval has no useful meaning for one observer, for more than one observer it is an arbitrary segment of space, expressed by movement in time. Neither space- nor time-intervals can be expressed by themselves, but must be expressed in terms of the other and are covariants of motion.

The speed of light The speed of light has no meaning for one observer, inasmuch as he has no experience of light at all but only of things lighted. The concept of light as a thing travelling is a hypostatization of "things lighted having a simple geometrical relation to each other, in that screens placed on straight lines between the lighted objects may suppress the illumination of one or the other and themselves

become illuminated”¹⁶ Working with the assumption that light is a thing travelling, experiments have been made to show that a ray of light reflected from a source to a mirror removed in space from that source is reflected back to that source after a certain time-interval. In this way the speed of light conceived as an entity has been measured with great exactness to be approximately 186,000 miles per second, *in vacuo*. This is what is referred to in the special relativity theory as invariant, although we can only admit its invariance in so far as it is measured in space- and time-intervals which are arbitrarily invariant. The speed of light is a convenient though heuristic concept.

We are now in a position to determine what the special theory of relativity means for common experience. It must be noted, first, that in making the speed of light an invariant, space- and time-intervals are forced to expand or contract inversely to each other in order to satisfy the speed. Any object conceived as travelling at a speed comparable to that of light must be conceived as reducing space-intervals to zero and increasing time-intervals to infinity, by definition. Thus for two observers on two bodies moving relative to each other at finite speeds an event on a third body would have a different space and time reading, because the light from the third body, by which the event is reported, reaches both bodies at the same speed, irrespective of their relative velocities; yet each measures the event in terms of his own frame of reference.

But the speed of light has a special meaning, in that the signals which it may be conceived as bringing in are the extreme limits of the present, the present being whatever is presented by sense perception. Any patterns removed in space from the observer can only be brought into the present by the sense of sight.

Let us see if we can make more plain what relativity states by comparing the motion of an object from the point of view

¹⁶ Bridgman, *The Logic of Modern Physics*

of two observers, *A* and *B*. *A* and *B* are ten feet apart, facing in the same direction, and an object, say a man walking, *C*, passes by them. The naive judgment of motion as to *C* will strictly not be the same for *A* and *B*, inasmuch as to *A*, *C* is receding, that is, becoming less here-now, whereas to *B*, *C* is approaching, that is, becoming more here-now. Yet by comparing the motion according to accepted standards of measurement, *A* and *B* will agree that the motion has been the same because they have agreed to assume an objective motion which has no connection with the individual here-now. And yet when that motion is measured by standard space- and time-intervals, *A* and *B* have unconsciously assumed the same here-now or frame of reference for purposes of agreement and common experience. Thus you can say that this agreement either warps or corrects the individual judgment. It is generally more convenient to affirm the latter. If we strictly follow naive visual experience, it will have to be admitted that *A* and *B* did not see the same pattern simultaneously nor was the duration of *C* conceived the same by both. The only way in which *C* could be seen the same by *A* and *B* would be if they were absolutely together, i.e. if their here-nows were identical. If a certain pattern of *C* is seen by *A* and *B* who are separated in space, that pattern must occur for each of them as separated at an interval in time, since the angle of vision of *A* is different from that of *B*. In this example of naive experience, the invariant is mundane clock-time, which is required if the whole conception is not to fall.

As we have stated above, the common frame of reference (the social here-now) is the earth. Motion is the change in spatial position determined by space- and time-intervals, relative to the earth. In this case the invariant is the earth. Let us now assume the existence of two planets, *X* and *Y*, moving at different speeds relative to each other. An event at *Z*, a third planet, occurs and is signalled by light to *X* and *Y*. Allowing for differences in the distance required for the speed

of light, the event as read on X is measured in terms of X as a frame of reference, and at Y in terms of Y as a frame of reference. Thus the readings cannot be the same, because they are made in terms of different here-nows; but this difference comes about by virtue of the fact that space- and time-intervals are defined as they are in terms of, in the case of X , X as an absolute frame, and in the case of Y , Y as an absolute frame. In order to get the comparison between them, some common invariant is necessary, in this case the speed of light is selected; and the speed of light is no more than a generalized and broadened present. If the concept of light as a thing travelling be abandoned, the special relativity theory becomes an impossible conception; and the conclusion would have to be that no optical phenomenon incapable of being measured in terms of here-now, i.e. by the contiguity of some tactile measurement, can be said to have determinate distance or a determinate time system. The famous time-retarding journey, where one twin remains on the earth and the other is projected at terrific speed outward through space and returns in twenty years by terrestrial time, although the traveller's clock only registers ten years, and his experience confirms the clock, is explained as follows. No interpretation can be put upon this experience, since no meaning can be attached to time-intervals *off* the earth, except by reference to the common frame for time-intervals, which is the earth.

This time-retarding journey is a graphic illustration of what would be the corollary to the relativity theory where light is conceived as a thing travelling at an invariant speed. The speed of light has been measured on the earth in terrestrial space- and time-intervals; what meaning can be attached to these same intervals *off* the earth? What would be a mile *off* the earth; what a second? But the speed of light, as arbitrarily invariant, is in relativity considered authentic throughout the universe; and this exemplifies the extremely conventional nature of relativity physics.

An event occurring anywhere in space except on the earth can have no absolute specification as at that place where it was supposed to have occurred. Thus, for instance, no body can be said to have mass unless it can be weighed; mass, too, being a measurement in terms of here-now. The earth cannot be said, then, to revolve around the sun, but must be said to be stationary and all else conceived as revolving around it. Inasmuch as this aspect is not convenient for astronomy, where the earth is treated not as a frame of reference but as part of a larger system of planets conceived as bodies similar to the earth and having a determinate position in relation to the earth, the earth is said to revolve around the sun. But here we must recognize that the science of astronomy is not an absolute description of reality but simply a convenient map to account for the apparent motions of stellar bodies which are optically observable. If this seems incredible, it is only because it is hard to remember that all astronomical measurements are fixed in terms of mundane space and time concepts, with the assumption in addition that these apply to optical as well as tactile measurements. Let us suppose for the moment that some omnipotent being would suddenly double the size of the earth and all material things. In what manner could this be known by human beings? It is our point that such a conception is nonsense, since all things may be conceived by different observers to be as small or large as they wish, and in fact are so variously conceived without affecting space measurements because space measurements themselves vary directly within such a conception. To illustrate how two conceptions may both be true from different points of view, consider the fact that to one observer in naive common experience the earth is flat and always beneath his feet wherever he may happen to be. Certainly this is no illusion and holds for certain purposes; yet for other purposes the earth must be considered as a sphere. But no one can conceive a sphere upon which he is standing and upon the other side of which another man is stand-

ing. But neither is the sphericity of the earth an illusion; and this conception, too, holds for certain purposes; yet for other purposes the earth must still be considered as flat.

This forcibly shows that as long as one point of view is accepted as absolute, the other must necessarily be false. The attitude of mind which can allow that there is no one true point of view that negates all others, calls for an intellectual elasticity toward concepts; and this is the essence of the attitude which will engender a new cosmology. Like all fresh attitudes, it seems at first impossible of acceptance. This reluctance is discussed in Chapter IV.

The general theory of relativity is a mathematical description of the way bodies behave in any field of co-ordinates, irrespective of the points of view of observers. The main idea which the general theory introduces, not introduced in the special theory, is the reduction of inertia and gravitation to an equivalence: the curvature of space-time. On an accelerated frame of reference a line is curved, which is straight to an observer on a non-accelerated frame, time is also curved, that is, it flows irregularly as compared to the clock-time of a non-accelerated frame. Einstein has shown that where there is relative acceleration between two bodies (one of which is in motion and the other stationary) the inertial force may be referred to the one conceived as in motion and the gravitational force referred to the one conceived as stationary, just as well as *vice versa*—for in either case the result is the same. Thus accelerated motion is relative, and gravitation is reduced to the curvature of space-time as caused by the presence of any massive body. Thus bodies as observed from any frame of reference will follow the space and time curvature of the particular region as plotted by that particular observer, since bodies follow the shortest path possible, called the geodesic, in the space-time of that region. In empty space, where the curvature introduced by the presence of matter recedes to a point where it is

minimal, space-time is considered practically Euclidean and, of course, not distorted.

This theory as stated in terms of a four-dimensional continuum, is a convenient visualization for mathematical usage, but is falsely simple and misleading as a description for common experience. The picture that four-dimensional curvature brings up is beyond ordinary description, so complicated is the concept; but some idea of it might be obtained by conceiving involute whorls in a bowl of oatmeal stirred around where the oatmeal is conceived as an infinite series of films and not as a solid mass. All this complication is unnecessary. The curvature of space-time simply means that from an accelerated frame, an ordinary straight line is curved, and a clock will run unevenly. But this is the simple result of defining space- and time-intervals in terms of the frame of reference, and is not some mysterious quality of the universe. The popular picture of "kinks" or "crinkles" in space-time as being the reality of matter, is entirely confusing and leads to the consideration of empty space as an existent entity, whereas empty space is merely a logical term for the absence of pattern, and should not be conceived as anything else. That definitions, whether of space- and time-intervals or not, strictly adhered to, introduce a distortion, should not seem a very strange idea. If all things are black and white by definition, then something grey, which has to be somehow explained in terms of black and white, must be a distortion, also by definition, of a clear-cut black and white.

Before proceeding to our explanation of what the general theory of relativity means for common experience, we must redefine the concepts in terms of which it is stated. These concepts are *mass*, *inertia*, *gravitation*, *accelerated motion*, and *distance*.

Distance. This is the judgment that what is seen is not here-now, that is, not touchable.

Mass and inertia. We have already indicated what the concept of mass is, in our discussion of classical physics. Mass

is the judgment of resistance, i.e. touchability, which is conceived as the quality of all identities capable of offering resistance, and retained even when they are no longer here-now. We pointed out that the concept of energy is the judgment that a counter-resistance is required to make an identity cease to be here-now and become there-now. Inertia is the resistance to this operation, conceived as a quality of the identity. Conceived as a force, inertia is always, as Newton pointed out, equal and opposite to the marginal amount of force which must be exerted before a body can be "moved" from here-now to there-now. Distance and mass are antithetical terms.

Accelerated motion. For one observer this is any motion not in line with the angle of vision, as judged by observation of the asymmetrically changing pattern of the identity in motion. For more than one observer accelerated motion is any motion where the identity exhibits an asymmetrically changing path as measured by space- and time-intervals. Practically, this is found by breaking up the path of an object in accelerated motion into an infinite number of infinitesimal segments, each considered as a separate uniform motion.

Gravitation. We have said that here-now for one observer means what is touched, but for more than one observer the common here-now is the centre of the earth. By our definition of mass as something here-now, the proper position of every tangible object is the centre of the earth. Thus gravitation is the effort of every tangible object to become here-now for more than one observer, or, in other words, to approach the centre of the earth. In order to prevent this from being construed as an *ad hoc* theory, we might ask what construction could be placed on phenomena for more than one observer if there were no common frame of reference, that is, no proper position, for objects? Whatever prevents bodies from approaching this common here-now must be conceived as a counter-vailing force.

To understand what the general theory means to common experience, it is necessary to remember that from the point

of view of two observers on the earth, an object in motion exhibits different asymmetrical patterns which they later agree to refer to space- and time-intervals which are common, for correction. Now let us place two observers on separate planets. *A* on the earth, and *B* on any other planet, in relative motion to each other. A third body, *C*, is moving by them in relative acceleration to both. The space and time measurements of *C*'s path will have different readings on *A* and *B* by virtue of the fact that the space- and time-intervals are by definition in accordance with the frames of reference of *A* and *B* respectively. And thus a body in acceleration always follows a curved path; that is to say, the space and time measurements constantly change, or, as it is expressed by Einstein, follows the space-time curvature of its region. This curvature must increase with the mass of the object provided that mass be accepted as invariant, and decrease with the distance provided that distance be accepted as invariant. For space- and time-intervals attain their definition in terms of the frame of reference. Therefore from the earth a more massive body, such as the sun, taken as a frame of reference, would hold for its regional objects different space and time readings in keeping with its defined mass. In other words, every object tends to be conceived as here-now by any observer from his own frame of reference, and any deviation from this tendency as measured in space- and time-intervals must be conceived as force, curvature, or distortion.

But to drop all consideration of the general theory of relativity as an absolute description of nature, we find simply a constant relation of variables which holds wherever one variable is made constant. For instance, mass has meaning only in terms of distance, and *vice versa*. Curvature and acceleration attain meaning only in terms of each other, and that meaning depends upon a commonly accepted here-now, commonly accepted space- and time-intervals. Thus the whole theory is inherent in and deducible from the meaning of space- and time-intervals, which in turn are expressions of

the relations between here-now and there-now and their relative values for various occasions, and may be summed up by stating that there-now is a substitute notion for here-now; and therefore when touch and sight co-operate to define there-now, vision "distorts" touch.

If we seem, in our explanation of the foregoing terms in which the general theory is stated, to have reduced it to a description of tactile and visual values, it is only because the concepts in which the theory is stated first arose through touch and vision; and in order to determine their meanings and limitations it was legitimate to return to their genesis. This is not to be construed as an attempt to explain the psychological implications of existents in an independent world, but to state that the relativity theory is merely a logical and self-contained exposition of only what was implicit in the manner in which the original concepts were formed. In making vision and touch, especially the latter, fundamental, we are appealing to the canon of naive experience, not because we consider it ultimate, but because for cognition the sense of touch is irreducible; and any further theory will inevitably have to employ, as indeed we ourselves did in our explanation of the fictional nature of discrete being, concepts in terms of tactile values.¹⁷

In concluding our discussion of both relativity theories, we may say that they are convenient mathematical descriptions of certain abstracted aspects of the mode of perception, which do not in any sense break through or supersede experience. The notion that these physical formulations constitute invariant "laws" of nature which introduce a strict causality is exploded by Einstein himself; for he has in effect returned to the destiny or entelechy of Aristotle: the principle that bodies are destined to move where they do move. He states in effect that the motion of a body is determined by the space-time in its

¹⁷ The repugnance of physicists to the notion of action at a distance, together with their willingness to accept action by contact, suggests the correctness of this point

locality, which in turn is determined by the mass of the body. But the mass of the body is determined by its velocity; and velocity is space-time. X equals Y , Y equals Z , Z equals X , therefore X equals X . This is pure cyclical description and undeniable; but at least the idea of coercion of forces, or "law," falls.

IX. SOME METAPHYSICAL EFFECTS OF RELATIVITY

What conclusions in regard to the method and meaning of physical science are to be drawn from relativity physics? Relativity deals a fatal blow to the old-fashioned empiricism that conceived the external world as a set of irrational facts, by showing plainly what should always have been evident, that physics was confined to a certain set of operational concepts, abstracted from a totality of experience. Relativity proves that physics has always been explicating the logical conclusions of these accepted concepts, and therefore should dissipate all questions of how mathematics, a purely rational instrument, could be applicable to the physical world wherein universals were supposed to have had no objective existence.

Relativity has furthermore shown that physics is strictly a deductive mathematical science, the purpose of which is to serve common experience. Physics becomes more and more abstract and removed from common experience in order to make, as Einstein has made, a map of certain relations; the more bald it becomes in its discreteness, the more removed it becomes from what is inclusive and significant, but the better it serves common experience.

But if physics has discovered no data of an independent world, and has only made certain generalizations about aspects of common experience, that is, the world as it is known to perception, it must not be supposed that the data of experience are *created* by the mind, or that such metaphysical conclusions as may be drawn would lead to subjective idealism. The mind is itself a convenient concept, useful only in distinguishing the discreteness of the individual from all else; though mind

does not mean anything by itself. The data of experience are percepts and concepts; and to say that such are created by an unknown fictional entity, like mind, would not, we believe, explain anything. The point we wish to stress is that percepts acquire the "qualities" which they have, such as position, resistance, etc., through necessity and long usage, and therefore through agreement, for when percepts are analysed, we find that they are built up from meanings, i.e. concepts, which relate beyond themselves; and to strip away all these meanings is to find no thing-in-itself. But on the objective side, the individual or the knower is inconceivable without the existence of something to be known; and therefore percepts do have an objective and quasi-independent existence of their own. The old question of whether things continue to exist when they are not seen, is one for the objective realist to answer. What is left of his independent world when he takes away all concepts which he considers imposed by the mind? Remember that this will include even the concept of the discreteness of identities, and the disappearance of electrons and events as well, since they, too, are identities. Obviously he cannot answer this question without begging that his concepts be illicitly branded as things-in-themselves. Our answer to this question is that all possible things and relations exist always and everywhere, and that it is only the fact that the form of our being is as it is and not otherwise that limits or conditions basic unity and causes certain things and relations to emerge as against others which do not. This again is a truism, for by definition a human being is one who perceives the same set of things and relations that the rest of humanity has selected and agreed to accept.

An entity in physics is a concept which stands for a percept stripped of all values not subject to universal agreement, and is merely a crystallization of metrical relations. It is thus a fictional entity which is indescribable by itself but must be understood as relating to things beyond itself. Relativity has shown that these fictional entities do not have proper qualities

but have relations beyond themselves which can be specified only by reference to other things. Thus relativity exposes the aforesaid fictional nature of identities; but in so far as reason is incapable of operating without identities, relativity has merely refuted mechanical explanation without offering any comprehensible and satisfactory substitute which can be depicted for common experience.

By showing that there can be no *now* which is absolute for the universe, relativity has supported our argument on the meaning of time, set forth in Chapter I, as being a concept wholly dependent upon identities. However, by taking time to be wholly expressible in time-intervals, that is, motion in relation to a common frame of reference, the earth, and by spreading this time over the universe by means of the invariant speed of light, the relativity theory has superficially hidden its metaphysical issue.

The relativity theory often confuses space and space-intervals. Actually, relativity deals only in space-intervals, and its conception of the curvature of *empty* space is an illicit one. Space relates only to the position of identities, which relativity has well shown to be dependent upon things beyond the identities. Thus space is like time a concept unambiguous except for one interpretation. By taking space to be wholly expressible in space-intervals, that is, operations performed by movement in relation to a common frame, the earth, and by utilizing these space-intervals, together with time-intervals, on phenomena which are not referable to the same frame, relativity has been able to reinstate a sort of uniform objectivity.

It was seen how, in the relativity theory, the notion of an object as occupying a certain absolute position at a certain absolute instant, falls and is replaced by the space-time of a four-dimensional continuum. In Chapter I we set forth our view of motion as a set of patterns pinned through by identity so that the patterns are not conceived as a series of static identities but as one identity changing its form. Thus motion is for one observer a space-time judgment in the sense that

we have defined space and time (*not* space- and time-intervals). In other words, motion is interpreted for one observer as the endurance and position of an identity. This may not be the same for more than one observer. But we have said that relativity deals not in space and time but in space- and time-intervals, which are the commonly accepted co-ordinates of motion. So relativity does not deal in motion but in the infinitesimal velocity at a point, as expressed in space and time co-ordinates; this does not yield motion, which has no infinitesimal interval, but yields a close mathematical approximation of motion; and so relativity reveals the impossibility of explaining motion while retaining the concept of identity. No finite number of points will make a line; and no series of infinitesimal velocities expressed in space- and time-intervals will make an identity in motion. If motion is accepted, identity becomes impossible; but if identity is accepted, motion becomes impossible, and it is the latter conception that relativity unconsciously accepts. Therefore relativity finally confirms our conception of motion in a roundabout way, by denying motion and by yielding in its place only a conventional mathematical description of it, and one which can never be exactly true unless it be admitted that infinitesimals and infinity are experiential existents.

X. CONCEPTS COROLLARY TO RELATIVITY

The all-pervading ether as a physical substance was one of the first concepts dissipated by relativity. The concept of empty space took its place. Empty space is postulated by the physicists as the distance separating bodies, which is supposed to be void of content and therefore strictly a negation; yet they speak of empty space as an existent capable of having metrical qualities; and in this manner the old idea of the ether creeps back even while its physical existence is denied; and so its illicit use continues.

According to our interpretation empty space is the necessary

negative logical category for the absence of pattern, and is immediately demanded by the concept of identity or discontinuity. Empty space is non-being, by definition an impossibility, and inconceivable by itself or in terms of itself.

Although the new physics has made any number of attempts to avoid it, the concept of action at a distance remains. Even in relativity, if space-time be not considered as a substance, action at a distance is demanded; for the effect of gravitation is no less action at a distance whether this effect be conceived as a force or tug, as by Newton, or as something determining the path of a body in the neighbourhood by affecting its space-time, as by Einstein. If this space-time in the neighbourhood of any massive body be held to be crinkles in a medium, action by contact is restored; but it is just this conception of crinkles in a medium which cannot be allowed, and indeed the theory of relativity owes its origin to the denial of the existence of a medium. In the reluctance to believe in action by aught but contact, and the tendency to explain all physical phenomena in terms of action by contact, physics again exhibits its concepts as having originated in tactile sensation which we have stated to be fundamentally irreducible.

This brings us to a closer examination of what is meant by contact, and so to a consideration of the sense of touch. We have said above that the sense of touch is the human interpretation of what relations impinge on or threaten the form of being, which, through the help of vision, become hypostatized into objects which offer resistance. We must now make the statement that such relations can never be conceived as actually touching or penetrating, since an identity could not remain an identity if it were subject to such mergence. Thus the here-now of the individual is never completely attained by any object, but must always be separated by distance, however short. We wish to point out that this separation is implied in the logical nature of discrete or discontinuous objects. Therefore action by contact is itself action at a distance. "There is no real contact between two bodies

When one body has collided with another it seems to have touched it, but this is an appearance. In reality, at the moment of the impact the particles nearest to one another have remained separated by quite appreciable distances."¹⁸ If this be the physical findings of action by contact, it does not make the explanation of action at a great distance more explicable by filling in that great distance with any number of intermediate actions by contact, themselves action at a distance. The mechanical explanation, therefore, turns out to be no more acceptable to common sense than the mysterious action at a distance.

As long as identities be accepted as the absolute entities of the physical world, no rationalization of action can be effected; but if the view which we take of identities and motion be accepted, action at a distance is rationalized. There is no absolutely true discontinuity; and consequently identities are essentially fictional. If the world is continuous, as we have postulated, empty space is thereby denied, and action at a distance seems to require no further explanation. What is required is an explanation of the manner in which a seeming discontinuity is effected; this we have given as the fictional distortion of basic unity which is required by the discreteness of the individual consciousness and affirmed by the function of reason, though reason asymptotically attempts to effect a reintegration. Motion is itself a denial of discontinuity and remains for reason a constant reminder of its final fictional nature. The mathematical explanation of motion as being built up of infinitesimal states of rest is a clear case of the incapacity of reason to accept continuity; for no matter how small are the periods into which motion is divided, it only approaches as a limit the state of rest; and the infinitely small, like the infinitely large, is unattainable.¹⁹

¹⁸ Meyerson, *Identity and Reality*.

¹⁹ This is a proof from mathematics that the knowable demands for its understanding the unknowable or infinite. For a further discussion of this point, see Chapter IV.

Continuity is further demanded by electromagnetic fields²⁰ and radiation, for here it is supposed that waves of energy are propagated across empty space; and yet the very definition of waves supposes the existence of a medium. It is of course understood that the propagation of energy is only observable in its effect on matter, and it is only because these effects can be screened in a certain geometrical relation that the concept of their traversal of space has arisen. If we abandon altogether the notion of energy as a thing travelling, another explanation will have to be offered.

It must be remembered that the concept of force arose through the differentiation between resistance and the object resisting. This means that through the sense of vision the pattern of an object which is here-now continues as a visual pattern when the object is no longer here-now; and so the continuity or identity of the object is preserved. But when an object is no longer here-now, the resistance is not observable, yet if this object is to continue identical to the observer, its possibility of resistance must likewise be conceived as resistance even when the object is no longer here-now but is becoming there-now.

We have further pointed out, in our discussion of gravitation, that the proper conception of all objects is as here-now, and that the common here-now for all observers is the centre of the earth, for without a proper frame of reference no inter-

²⁰ We offer here a suggestion in terms of our metaphysics as to the possible meaning of electromagnetic fields. If, as we postulated, discrete unity is the fictional distortion of basic unity, then all such discrete unities must be conceived as tensions and always tending to merge back into a state of equilibrium. These tensions vary; and the variation might be termed the potential, and so the strain brought about by the fictional nature of discrete unities is equivalent to their electrical potentials. Without this difference in potentials between unities, all unities would be conceived as one and the same. In terms of our metaphysics, this signifies that in the selection of certain meanings and in the consequent suppression of certain others, different degrees of distortion occur. The fictional dualism thus sets up the polarity of electrical positives and negatives between identities.

pretation of phenomena would be possible. Space- and time-intervals we have shown to have meaning only in terms of the earth as a constant frame; thus all objects must be conceived as tending toward their proper position, that is, at rest at the centre of the earth. But all observable motion is accelerated motion, or, in other words, the object is becoming more or less here-now, or again, its measurement in space- and time-intervals, which are by definition measurements from the earth as a frame, are continually covarying. They are thus distorted in terms of an object at rest or moving at a uniform velocity; and such distortion is force. In making the earth the common here-now for all individuals, and space- and time-intervals absolute, all phenomena which do not fit in with such a conception are nevertheless *forced* into it, that is, they are explained by a force external to and acting upon tangible identities. Force has seemed to be of two sorts: gravity and kinetic energy. Inasmuch as the force of gravity has seemed to reside in the object's mass as a quality of the object, whereas other forces have seemed to be opposed to this mass, these two forces have been conceived as dissimilar. This is because the force of gravity is a pure prolongation of the conception of the centre of the earth as the proper here-now; and the conceptions of all other forces originate in attempts to reduce the motion of objects to the proper here-now. This naturally opposes gravity to other forces. Thus an object which does not fall at right angles to the earth's surface is conceived as being acted upon by a tangential force. Gravity is an un-screenable force whereas other forces can be screened; and this is evident from the above in that the other forces derive their meaning in terms of gravity, that is, they are distortions of space-time only with reference to the earth as a common frame.²¹ A distortion is only a distortion from some accepted norm.

²¹ What, then, is being measured when energy is being measured? A relative quantity which must vary according to the relative motion of the object on which energy is being expended. All measured energy is on objects in motion relative to the earth as a common frame. This being the case, the argument for energy as an invariant fails.

The concept of force is a prolongation of the sense of touch by vision, and integrates or denies empty space as discontinuity. We have described the world as continuous, in which discrete unities are fictional as identities; and motion has been described as a denial of discontinuity in so far as it integrates patterns, though fictional as it holds on to identity. Force is a further conception of integration in that it attempts to connect tactile patterns and thus expresses a relation between them; but it, too, is fictional in that certain tactile patterns are selected and others refused; yet this is the very essence of the concept, for if all possible tactile patterns were always realized there would be no conception of "force." The relations which constitute a force can be conceived only as acting on an identity because the mode of perception compels individuals to deal only with identities and not at all with potentials; and so a force is never found by itself but always in connection with a perceptual pattern.

Strictly, there is no common experience of light; and for Bridgman, "from the point of view of operations, light means nothing more than things lighted"²² We would rather put it that things are no more than things lighted. Light is what is for vision; and the concept of light as a thing could only have arisen through the perception of degrees of intensity of visual distinction; and thus light can only be defined in terms of shadows or darkness or colour. It is, therefore, because we see in different degrees of intensity that we see at all; for if all things were in total darkness or in total white light or colourless, no visual pattern could emerge and objects could not be "seen." Thus light, like force, must be conceived as potentially everywhere; and light only becomes light for vision inasmuch as it is not all evidenced at once. Out of a totality of all possible relations, vision interprets certain ones and touch interprets certain ones; but the physicists speak only of those relations as existent which touch selects for inter-

²² *The Logic of Modern Physics*

pretation; and they state that these quasi-physical tactile relations are the cause of the others. The common argument that this must be so because it takes a certain time-interval for light waves to travel from the source to the eye, is invalid, since a time-interval expresses the judgment that here-now and there-now are not one and the same. Any such argument necessarily ignores the derivation of time- and space-intervals.

The sense of vision is responsible for the judgment of there-now, or in other words it interprets relations less intimate and more remote from the form of being, though visual phenomena must be always reduced to tactile values. Thus vision is the limiting sense of the present; and what can be seen is always in the present and tends to be here-now. The speed of light is not a thing but a concept which denotes that the there-now of vision is a quasi here-now; so light does not travel through space at all, and the "speed" of light becomes a purely heuristic concept.

XI THE NATURE OF MATTER

In passing from relativity and its corollary concepts to the nature of matter it is instinctively felt that an approach from an entirely different attitude is required. Relativity treats of matter, but only in its aspects as relational to a system. It is true that certain qualities which were formerly believed to be the intrinsic qualities of matter, like mass, absolute length, etc., have been shown by relativity to be relational to a system. Nevertheless, matter retains its stubborn quality of impenetrability; and it is matter considered as a thing-in-itself that we shall now examine.

Physics had on faith taken matter and carved it up into increasingly smaller and smaller units with the hope that by such a process it would be possible to determine its nature. Physics first arrived at the smallest particles of matter which it named molecules; these in turn were broken up by electrolysis into atoms, which for a long time were considered final. The differences in non-elemental matter were attributed

to the different configurations of the atoms in the molecules. It was later discovered, through radio-active elements, such as radium, that this unit of matter was not final, but that each atom consisted of a field of force: a nucleus positively charged with electrons revolving around it, similar to a miniature solar system. In all but the hydrogen atom the nucleus was found to be a composite of electrons and protons; in the hydrogen atom a single proton makes up the nucleus and a single electron revolves around it. At first these protons and electrons were conceived as material particles electrically charged; but the difficulty of so conceiving them came about through the determination of the amount of their electrical charge, inasmuch as the amount of that charge accounted dynamically for the whole particle; and nothing was left over to account for any material substance. In this way the concept of matter vanished from physics; and matter became the emanation of force from a point. Physics, however, has been unable to drop the concept of matter altogether, since the field of force which is the atom, acts like a material particle and obeys outside itself the laws of matter. Yet within the atom the classical laws of mechanics fall.

The fact that the atom does not obey classical laws as far as its inner composition is concerned has forced the physicists to give up entirely the mechanical models of the atom, and to formulate for this irrational certain mathematical laws which are termed quantum mechanics. Quantum mechanics contradicts all the postulates of large-scale classical mechanics, first, by prescribing only certain orbits in which an electron can revolve; secondly, by virtue of the fact that though an electron is a determined size, it always pre-empts the total space of its orbit, so that it seems to be spread all over that orbit while not occupying any determinate space; and, thirdly, when not jumping from one orbit to another it is undiscoverable and apparently nowhere, thus denying all ideas of the continuity of motion and identity. Moreover, it jumps from one orbit to another when excited by an outside force, such

as light, at which time it emits or takes on energy. But the energy which it emits or takes on is not emitted or taken on continuously but in packets which, multiplied by the duration of the emission or absorption, always equal one or a multiple of one constant called the quantum, which is a very small lump of action, a certain fraction of erg-seconds. This quantum of action appears to be absolute and involved in all interchange of energy wherever a definite period can be assigned to such interchange. Thus energy and duration may covary according to frames of reference, but they always covary so as to produce the quantum as a product.

The consequences of the quantum theory for physics are an even plainer case than those brought out by relativity to prove that the old metaphysical conceptions which had clustered around classical physics have shown themselves to be inadequate. A particle in classical physics, no matter how small or large, had always associated with it a definite position and velocity, and its motion was continuous, that is, it retained its identity through spatio-temporal change. The quantum theory seems to deny continuity, inasmuch as an electron appears first in one orbit and then in another, with no indication of having traversed the space between. It seems also to deny determinacy, since either the position or the velocity of an electron can be accurately calculated but not both, except with a rather wide margin of uncertainty. There are two interpretations by physicists of these apparently irrational phenomena: the first explanation attempts to retain the old metaphysical conceptions by believing that if more could be known about what was taking place in the atom than its exchange of energy, it would be seen that causality and other classical laws were still valid in the microscopic world. The second explanation abandons at once the old metaphysics and believes that even if more could be known about the atom, classical laws would never apply, inasmuch as classical laws are concepts which were designed for and apply only to the macroscopic world. But although the second explanation abandons mechanism in

its consideration of the structure of the atom, it substitutes nothing intelligible in its place; and physicists do not draw the corollary that such a statement demands a drastic reinterpretation of classical laws; instead, both schools finally take refuge in the statement that mathematics alone can set forth what occurs in the atom, and that no explanation is possible in other language. Again we refuse to admit that such a state of affairs is possible; and again we wish to call attention to the fact that no matter how inconceivable in terms of common experience a mathematical formula may be, if its results are to mean anything to common experience, its symbols must have had meaning in terms of common experience, and therefore its processes must be explicable in other than mathematical terms.

The explanation of the quantum theory in terms of our metaphysics demands, first, a clear understanding of the terms in which it is stated. The quantum theory is stated in terms of *energy (ergs)*, *time-intervals (seconds)*, *motion*, and *identity*. We have already defined these concepts, but as to the erg, we wish to point out that it is defined by space- and time-intervals and dynes, and a dyne, in turn, is defined by space- and time-intervals and gravity (grams), and gravity, again, reduces itself to time- and space-intervals plus a frame of reference which make time- and space-intervals definable. Thus the whole conception of the quantum is phrased in terms of space- and time-intervals and identity.

It is with the concept of identity that the quantum theory is mainly concerned; and it is therefore necessary to examine this concept more closely than we have done. We have stated that this concept is fundamental, and that without it there would be no experience; yet at the same time it is evident that no exact meaning can be attached to identities, though the concept itself is plain. Let us, for example, consider a chair as an identity. But is it absolutely an identity? For it may be conceived as an addition of such identities as legs, back, seat, etc. But these, in turn, are they identities? They

also may be broken up into additions of other and smaller identities; and so on until we arrive at the constituents of the atom. It would appear from the above that we have stated that there is no true identity except the constituents of the atom; but plainly this is absurd: each part of the chair or the chair as a whole is, from one point of view, an identity and can be equally well treated as such; or, to go further, a chair may be considered as part of the identity of a suite of furniture. Thus an identity is defined by what you choose to exclude and consider quasi-nonexistent.²³ Obviously, also, identity as attached to a rigid body cannot be understood in the same sense as identity as attached to a fluid; for instance, the identity of a river is not the same notion as that of a certain house on its banks, but consists in a more or less unchanging relation between banks and flowing stream; but of the water itself, which makes up a river, from a material point of view it cannot be said that it remains the same. It can easily be seen that identity is an elusive concept, and is not a quality of anything but a concept attached variously to phases of experiences. Reason depends upon the concept of identity; and thus the reduction of all matter, whether solid, fluid, or gaseous, to rigid and final particles is necessary for physics, which is why mechanism at one time seemed such a plausible final explanation and why physics has never entirely abandoned it. Discontinuities, however small, are required by reason; and therefore any experiential ultimate would necessarily have to be conceived as a discontinuous entity.

We have shown that identity cannot be a proper quality of anything. We shall now attempt to set forth just what the concept of identity means. The concept of identity is the judgment that some positive property involved in experience continues unchanged. This property may be any property abstracted from the totality which seems to make up a thing. Let us suppose that *A* and *B* are in a room in which there

²³ The question of what the quasi-nonexistence of all else but an identity involves is discussed in Chapter IV.

is a chair. *B* takes the chair out of the room and brings back another exactly like it. For *A*, this is the same chair that was removed, since we are supposing that *B* has not communicated any information concerning the chair; but for *B*, this is a different chair, inasmuch as he has seen the two chairs together. What does it mean to say that this is not really the same chair? It means nothing for *A*, since nothing positive in the situation has caused him to make the judgment of dissimilarity. For *B*, however, the dissimilarity arises from his common-sense judgment that the two bodies having different spatio-temporal relations cannot be the same. The point is that the identity which attaches to anything is a rational and practical judgment made from the attitude of some particular aspect on some particular occasion. Is a flash of light from a torch the same as another flash of light from the same torch, providing that both flashes have the same intensity and duration? The answer is yes or no, depending upon which aspect of the event is compared; historically no, physically yes. If any two positive aspects of two situations be so similar as to be indistinguishable by any available canon at the occasion, the aspects are identical; and no meaning can be attached to the question of whether this identity is real or apparent.

We are now in a position to set forth our explanation of what the theories of atomic structure and the quantum mean for common experience. From the above it will be plain that identities are not things-in-themselves but are definable only in terms of their relations to other things which are beyond themselves. In the electron this becomes inescapable, since the electron exhibits at one time the character of a thing and at another the character of a field of force. Electrons are discontinuous and are not things when not in evidence. This does not prove that they are different from large-scale phenomena; what it does prove is that large-scale phenomena have been interpreted by their familiarity to common experience.²⁴

²⁴ We distinguish between naive experience and common experience. For naive experience, for instance, the individual does not move, but

and this interpretation has been accepted by physics. Nevertheless, in large-scale phenomena as well as in microscopic, a thing is a nodule of relations and only fictionally independent; if all relations be abstracted, naught remains.

We have stated that every possible pattern is always potentially everywhere; the question now arises, why only certain patterns emerge in only a certain way and conduct themselves as though they were aspects of things. Thus in the atom the electron is a pattern potentially everywhere within a certain field of force, and emerges, when it does emerge, as a certain entity. This point takes us back to our discussion of force. We found that all force excepting the force of gravity consisted in the common human attempt to reduce all relations to the absolute norm of space- and time-intervals, which are absolute only in relation to the earth as the common frame of reference. This attempt distorts spatio-temporal intervals, which must covary as long as the conception of a thing acted on by force is preserved. A field of force is a limitation imposed by the distortion of space- and time-intervals, it must be limited, else the conception of distortion could not obtain. A field of force is thus the neighbourhood wherein a pattern which is not in evidence may reappear. Because of spatio-temporal distortion, the appearance of a pattern is limited to certain space and certain time.

It must be concluded that things in the macroscopic world also only come into existence within fields of force, that is, identities are observable only when light is shining on them or objects can be felt only through pressure. This is no more than saying that the fictional being of identities logically implies the distortion of basic unity, and that in holding on to these identities as things-in-themselves it is necessary to add the conception of force. Furthermore, the forces which

all else moves in relation to him, in common experience a correction has been made and it is judged that the individual moves. Common experience is the metaphysical interpretation current among people in ordinary daily life.

are necessitated by such a distortion of basic unity are made determinate by the common frame of reference of humanity.²⁵

The atom is a thing when viewed from the outside in no essential different from any other thing; that is, it exists as a thing in so far as its identity is determinate through inference from touch and vision. Likewise, the electron is a thing only when discoverable; and to question whether it goes on existing as a thing when it is not discoverable is to pose a meaningless query. As an identity, the electron has no more or no less existence than any other identity. In the electrolysis of water, oxygen and hydrogen emerge. This does not mean that the oxygen and the hydrogen were *in* the water but only that, in physical terms, a certain kind of force was required to make them emerge. And so the electron is not in the atom but emerges from it when acted upon by the proper force. Thus what we have set forth as true for large-scale phenomena, namely, that an identity is not a thing but only the concept of identity as attached to and pinning through a train of patterns, is made evident in the electron because the "force" which makes it emerge (light) is the only way in which it is discoverable. The electron emerges as only one pattern; and there is no continued train of patterns for identity to pin through.

That macroscopic phenomena do not differ legally from microscopic is reinforced, from another angle, by what is known as the principle of indeterminacy, whereby it is asserted that either the position or the velocity of a particle may be determined, but not both. If our argument as to the motion

²⁵ In the telescope and the microscope we are given instances of how a change in a field of force or in space-time is effected, and how that effect is interpreted so that the object is not really made larger or nearer, but that the light rays are so diffracted that it appears so. Our interpretation is that there is no real size or distance, or rather that real size or distance is determined by the space-time of the neighbourhood wherein the object emerges, apparent size and real size being one and the same. Thus distortion is, of course, relative to the normal space-time of the observer.

of large-scale objects be followed strictly, this will be seen to be equally true of them. No object in motion is ever at a point at an instant; otherwise, as Zeno has shown, motion would be impossible. Physics has veiled this fact by the use of infinitesimals; but surely, although perfectly valid for practical purposes, there are no infinitesimals of velocity. Therefore both the velocity and position of an object cannot be determined with absolute accuracy, even in the macroscopic world.

It is on the subject of infinitesimals that physics has gone astray. The asymptotic approach to a goal cannot by definition be the same as the arrival at that goal; but an infinite regress is involved. In mathematics this fact is slurred over by the inconceivable infinitely small space-interval or the infinitely long time-interval; and mathematics must be considered as either begging the question or begging for the infinite. In experience, neither the infinitely small nor the infinitely large may be conceived, for reason deals only in finite discontinuities. Thus continuity as postulated by the relativity theory is a false continuity, inasmuch as infinitesimals are not experientially existent. It should not be surprising to learn that action is discoverable only as discontinuous and that its discontinuities though small are not infinitely small. It must be remembered that action is finally reducible to space- and time-intervals which are by definition finite, and their function in determining the measurements of continuous motion are bound to be not quite accurate, since mathematics is not capable of dealing with continuity. Thus the quantum of action is a certain quasi-infinitesimal, determined by the definition of space- and time-intervals, when a certain periodicity (time-interval) can be attributed to an interchange of energy. Elsewhere it has been shown that the measurement of energy must vary according to the frame of reference employed; and that energy should covary with the time-interval of its expenditure to produce a constant, should not surprise anyone familiar with the covariance of time- and space-intervals in

the theory of relativity itself. This does not prove an absolute finite objectivity in nature, as some physicists believe; what it does prove is that some frame of reference must be fixed in any situation in order to determine the value of the variables. The quantum theory, like relativity, is a logical deductive analysis of certain accepted definitions of measurement.

The direction of our metaphysical argument, as proved by relativity and atomic structure, should now be clear to the reader. The metaphysics of classical physics (which is the current metaphysics of the modern mind) assumes that an object has certain qualities which are intrinsic to that object. The relativity theory has shown that a number of these qualities were not properly qualities of the object but of its relations beyond itself. Things lost their absolute dimensions, their absolute duration, and their absolute mass. Relativity left objects only an indeterminate extension and an impenetrability; these the quantum theory has removed as intrinsic qualities, and has shown that they, too, are relative to the space and time readings, which in turn are relative to the commonly accepted frame of reference. Thus the world of matter disappears as a metaphysical reality, and becomes a set of concepts. It disappears as a reality for physics in place of which the concept of energy is substituted; so physics has acted true to form in its reduction of all phenomena to the sense of touch, from whence its initial concepts came. But energy, too, we have shown to be reducible to space- and time-intervals. Space- and time-intervals have been shown to be a way of differentiating between here-now and there-now for more than one individual. Here-now and there-now are orientations arrived at from the fiction of the discreteness of the individual; and inasmuch as all experience has meaning only in terms of this fictional dualism, it is impossible to effect any reduction past naive experience. All we can show is the relational, fictional, and conceptual nature of all experiential entities; no statement can be made as to what these relations

are other than the following: they are non-understandable except in terms of an infinite continuum.

XII. CONCEPTS OF ORGANIZATION

In discussing those physical concepts grouped as concepts of organization, the first necessity is to define what is meant by organization. The first word to be said about organization is that it cannot be defined except with reference to some one specific attitude. If a boiler in a factory is not sufficiently insulated, energy escapes in the form of heat, so that the boiler becomes less efficient as a source of power to drive the factory's machinery; and from this attitude the system represents a woeful disorganization. But from the point of view of the necessity of heating the factory, this escape of heat from the boiler tends toward an organization; so what is organization from one attitude is disorganization from another. In this instance there is no difficulty in an engineer deciding between which system is, and which is not, organized, because the valuable function is the operation of the factory's machinery; but plainly the question of value is here involved.

Organization implies the arrangement of more than one identity; this arrangement seems to produce an effect which is something more than the simple addition of the individual identities. For example, the concept of temperature is stated in terms of organization of molecules. Thus, as Bridgman points out, a single molecule or atom cannot be said to possess temperature. Plainly, therefore, even for classical physics these concepts are seen to be relative to the grouping of identities within a system, which, by the relativity theory, must differ according to the frame of reference of the observer.

Our discussion of relativity and atomic structure has led to the inevitable conclusion that single entities themselves are in a sense a product of organization, since we have found that a single entity cannot be defined by itself, and that all qualities which were at one time thought to be proper to objects have turned out to consist of relations beyond them-

selves, or, in other words, dependent upon the frame of reference, which is to say a specific organization. Concepts like entropy, physics has been compelled to regard as concepts of organization, because it previously regarded particles of matter as final entities, and so concepts of groups of these entities were considered as effects of configurations. That single entities are considered more objectively real than groups of entities is due to the fact that they are always organized in relation to a set frame of reference, whereas the organization of groups of entities shifts. But obviously, from our reasoning, groups of entities treated as organizations or configurations, are precisely as real and as objective as the entities individually considered.

XIII. ENTROPY AND THE SECOND LAW OF THERMODYNAMICS

The famous second law of thermodynamics, which seems to predict the heat death of the universe through the gradual degradation of energy, was innocently enough propounded as the principle that the random element in a group is always on the increase, so that energy becomes less and less available. As such, this principle is of practical use in thermodynamical problems, for instance, where mechanical power is lost through the loss of heat beyond recovery. It was found that mathematically the amount of disorganization could be calculated by the probability against the group of entities regaining at random its former organization. Thus the probability of the original organization of a deck of cards reappearing through repeated shuffling is the measure of its disorganization, mathematically expressed in odds. But the second law of thermodynamics has a more general application than might be indicated from the above. Radiant energy seems always to be headed one way, namely, from the short and highly available wave to the long and less available; when an interchange of energy is effected, the energy always becomes less and less available, and apparently this direction of energy is irreversible. It is from this phenomenon that the deduction has been made

that the universe is doomed to eventual death in the form of the complete disbursement of matter into radiant energy and radiant energy into heat.

Let us consider for a moment just what this may mean. The organization or availability of energy must be defined from some one point of view. It goes without saying that the point of view is that of physical availability, and that from some other point of view the same judgment might not hold. Certainly it is true to say, following the theory of relativity, that what is organization for one frame is not the same organization for another, and the measurement of energy would not be the same for the two different frames. This should be sufficient to dismiss the notion that entropy is a philosophical concept which applies to the universe. As far as the applicability of entropy from the mundane point of view is concerned, entropy may be interpreted in a totally different manner, namely, that energy is reducible to the space-time distortion of a neighbourhood, tending to be continually conceived as approximating the normal space-time of the frame of reference, and in so doing becomes spread out from a more to a less restricted neighbourhood, until a complete equilibrium is approximated. It is true that, considered even in this manner, energy would become less available from the point of view of the world conceived as a set of tangible identities; but thereby whatever distortion existed is destroyed, and an integration of the continuum is indicated. Just exactly what the philosophical deductions here would be we are unable to set forth; nevertheless, this is what physics indirectly states when it talks about the "destruction of matter" and the "running down of the universe." This conception would tend to support our argument that the fictional distortion of basic unity is the prerequisite for human consciousness and its rational world of discontinuous identities.

The concept of entropy has seemed to some physicists to be an indication, and the only indication, of the direction of time,

inasmuch as time's arrow seems to be pointed in the direction of the increase of entropy. This much is true, that it is the only concept in all of physics which employs time in the sense which we have defined it in Chapter I. We defined time as the judgment of value, inasmuch as certain identities persist as against others which do not; and we further stated that identity inevitably attached itself to the more significant aspect of a situation. Therefore into a situation demanding preference, i.e. a judgment of value, time would inevitably enter. The second law of thermodynamics sets forth such a preference when it makes the judgment of value as to availability of energy. As to time's arrow, time is indeed an arrow which, as we have stated, points ahead, but whichever way it points *is* ahead. This is what is meant by time. the judgment of the more valuable between two or more identities

Therefore to make entropy or the second law of thermodynamics a philosophically significant concept, or aught but a practically useful instrument for proximate situations, is to suppose that the world of matter is supremely real, and energy an entity finally understood

XIV. PROBABILITY AND STATISTICAL LAWS

Closely associated with entropy are the concept of probability and the statistical laws. Probability is most easily defined as the asymptotic approach to certainty. In causality we have certainty; that is, one ideally simplified cause must produce one certain effect; and this is the way in which all laws of causality are stated in physics, namely, in ideal form. In common experience, however, there are no ideally simplified situations, and contingency can never be ruled out, since between the cause and the effect there must be an interval of time during which contingent elements may enter into the situation and change or inhibit the effect. Therefore it can be stated that the shorter the time-interval between the cause and the effect, the more certain is the dependable causal relation, until, as the time-interval between the two approaches

zero, absolute causality obtains.²⁶ Where the time-interval is other than zero, absolute certainty or causality cannot be predicated; but as the time-interval approaches zero, a greater and greater probability obtains. In the case of statistical probability, the same process is in operation though in another guise; for here absolute certainty is represented by the appeal to infinity through the iteration of the set situation an infinite number of times. Thus the oftener the situation is repeated the nearer certainty is approached, until when the situation has been repeated an infinite number of times, certainty is attained. To repeat a situation about which there is an indeterminacy an infinite number of times, is to have covered every possible situation which is undetermined, and thus to have reduced the unknown to the known, the contingent to the determinate. The appeal to infinity is equivalent to the appeal to the infinite state of basic unity in which all possible situations are contained. In other words, we find ourselves back at the same kind of truism to which causality brought us; for to have covered all possible situations is to have pieced all possibilities together and not to have made any distinction. In this respect statistical laws are like the laws of causality in that they depend upon simplification or definitions for their applicability.

In what way, then, is probability a truism and not an absolute physical law? This is an important question, since physicists who are willing to abandon strict causality as a law of nature still cling jealously to statistical laws. For instance, the quantum jump of an electron from orbit to orbit cannot be exactly determined; but the probability that it will jump to a certain orbit can be calculated in odds which will assert themselves with increasingly greater approximation the oftener the experiment is made. We must remember that in all situations where probability as a concept enters, certain set conditions are assumed alike for each occasion, certain others

²⁶ This is why we have elsewhere termed laws of causality truisms, since if the time-interval between cause and effect is zero, the cause and the effect would be one and the same event.

are allowed as possibilities, and all others not contained under these two classifications are excluded altogether. Let us suppose that a man is repeatedly tossing up a coin in order to determine the probabilities of heads and tails. The set situation here is, first, that a coin is tossed, and, secondly, that it is agreed to consider the face which is up after the coin has come to rest as the result; the possibilities are that the coin may appear as heads or tails; the situations which are excluded are all other elements whatsoever. The answer that will be obtained as to the probabilities of this operation (the tossing of a coin for heads or tails) follows from the definition of the set situation, and is in no wise a statement about the laws of nature. In causal laws the situation is so simplified that by definition all contingency is excluded, and also by definition the result desired must be obtained; but in probability some contingency is not excluded but an appeal to trial on an infinite number of occasions is made, which, in effect, is an exclusion of whatever contingency was allowed. If certain conditions were not excluded, probability would cease to have any meaning, for what could it mean to say that in tossing a coin, contingency might prevent the coin from being tossed; or if the coin were tossed, that the bottom side or the top side might be arbitrarily chosen as the result? Thus in probability one set situation is conceived as a disparate event and all else as apart. Probability is, then, merely a logical analysis of the implications contained in a situation by agreement abstracted from all other experience, and is no more than causality an independent law of nature

XV. THE MEANING OF PHYSICS FOR HUMAN VALUES

We are primarily concerned with human values, not with physics; and it was necessary to examine physical concepts only in order to determine how and to what extent human values are concerned. We would not have the reader construe this chapter as an attempt to set up a new method in physics, or have him believe that mathematics is not the most adequate

method of setting forth the concepts of physics *qua* physics; our entire aim has been to show the relation of the quasi-independent physical world to the individual observer as subject. This required the relating of physics to the balance of experience; and in so doing we perforce had to forgo any attempt to explicate in detail the problems proper to mathematical physics. For mathematics is the most analytical and abstract description of what is discrete, and, by consequence, the most bare of meaning; whereas the synthetic and inclusive purpose of philosophical survey is richer in meaning but poorer in detail.

The proper understanding of physics from the philosophical survey forces conclusions which will seem extraordinary to the modern mind, but from which there is no logical escape. Instead of man being an infinitesimal mite at the mercy of blind nature, he becomes the centre of the universe, inasmuch as this very blind nature is his own conception and dependent upon his manner of orienting himself in the world. This is not to be construed as a statement from the position of subjective idealism, that the universe is an imaginative creation of the mind; this danger we endeavoured to ward off in Chapter I. The infinite exists, of which man himself is a part; but this infinite in its full concretion is for ever unknowable; and the universe that he does know, in so far as it is partial, is a fictional construction of reality in human terms. From this point of view it means little to speak of the immensities of space or time; they are symbolic concepts. "There is no need to think of ourselves as powerless and small in the grip of vast cosmic forces. All measurement is conventional, and it would be possible to devise a perfectly serviceable system of measurement according to which a man would be larger than the sun."²⁷ Astrophysics, which is in the habit of speaking of distances in terms of light-years, is not to be taken naively but conventionally; for, according to relativity a mile, a year, and a second have no possible definition as apart from a frame

²⁷ Bertrand Russell, *Philosophy*.

of reference. Thus the stars are as and where we see them with the unaided eye or with the telescope; and what astronomy states about the stars is merely a convenient map, employing terrestrial space- and time-intervals as absolute for the universe. This is legitimate in a map, since any scale may be used which is consistent; but astronomy states only one aspect and one which neither exalts nor debases man's position in the universe, any more than a small map or a large map of the United States is a reflection on the size and importance of the country.

The same argument applies to the solar system. From the point of view of the sun, the earth revolves around it; but from the point of view of the earth, which is the point of view of man's common experience, the earth is stationary and the sun revolves. Even the astrophysicists admit that either interpretation is equally correct, but adopt the heliocentric system as more convenient for purposes of study. In fact, relativity makes any discussion of absolute motion in absolute space meaningless. There is no possible distinction between real and apparent motion "Space-time does not make the earth go round the sun; it makes us *say* the earth goes round the sun,"²⁸ or, at least, from the heliocentric point of view. We might sum up our discussion of astronomy by stating that it can tell us only of inferences drawn as though terrestrial measurements applied to non-terrestrial bodies; and therefore all statements which it makes as to what the stars or planets or nebulae are, or where they are, or how they act, must be understood not as statements about their absolute character, but only about their appearances as though absolute measurements did apply. To ask what they *really* are is to ask a meaningless question: they *really* are whatever they consistently *seem* to be!

This leads to the generalization that it is useless to inquire about the absolute nature of phenomena, whether terrestrial or otherwise. The so-called qualities of things consist in their

²⁸ Bertrand Russell, *Philosophy*.

observable relations; and if new observable relations are discovered, again such relations do not reveal the essential nature of phenomena, since the essential nature of phenomena cannot be discoverable because all possible relations exist everywhere; and this is equivalent to saying that phenomena are fictional. For if all relations were observable, nothing could emerge and all would be one. Thus phenomena have no intrinsic qualities, or, to phrase it reversely, whatever qualities are conceivable may be said to be the qualities of phenomena. For instance, an apple has dimension, position, mass, redness, lusciousness, and monetary value, etc., if and when and in so far as such concepts are applicable. There is no true method of dividing such qualities into objective and subjective; and it can be stated that so-called physical qualities are judgments made standard by agreement, and so seem more intrinsic than other qualities. Obviously, then, science might be said to be that branch of philosophy which deals in the logical relations between concepts about which there is final agreement. The physicist often distrusts his hypothesis when it is a statement about the natural world in terms of common experience; for it is hard for him to believe that nature is so constituted that she imitates man's common experience. The obvious conclusion, although one which he hesitates to draw, is that he is not investigating an independent natural world at all, but the logical implications of certain aspects of common experience.

In the first part of this chapter we said that physics purged the world of common experience of all values and qualities except the so-called extensive or physical qualities. This statement is somewhat misleading: the extensive qualities are, after all, values of a sort. To naive experience, values are all intensive, for instance, the distance of a trip, the size of a house, the weight of a rock, like the colour of the sky, the odour of a flower, and the sharpness of a pain, all seem to be more intense or less intense than other similar sensations. But obviously such judgments will not necessarily hold for more

than one observer; and therefore there must be a ground on which comparison may be commonly decided; and this is what extensive values are—commonly agreed upon concepts, so habitually employed that they seem to be “real” and independent of all judgment. Yet a little thought will show that naive experience does not accept them as absolute, though it is true that common experience does. It is these extensive qualities which are predicated as being the cause of intensive qualities, in the psycho-physical theory of perception.

Extensive values are thus values only in so far as they express the judgment of common agreement; and their importance consists solely in their usage for social living. And so the world of matter, abstracted, as physics abstracts it, from all intensive values, becomes in common experience a comparatively unimportant and only remotely valuable affair. Common experience never deals with it so abstracted; but, as we have shown, although it accepts extensive values as a sort of neutral ground, it invests them with coat upon coat of other and more inclusive values. The extensive qualities of the world of matter are finally, from the high vantage point of philosophy, of relative unimportance to experience, and, once rid of the fallacy that they are descriptions of ultimate reality, the way is open to the equal reality of other values, and we can assign them their place. The aspects of experience, with which physics deals, concern the temporal, proximate phases of being, identity, in common experience, refuses to attach to these, and they are not the main business of philosophy, as most modern philosophers seem to assume, for they are hardly heeded in the larger integrations of experience and in the quest for significance. The world of physics leaves out entirely those values which are for experience the richest in relations of meaning; significance is approached through the most concrete symbols, whereas physics deals in the most abstract. A philosophy of entire man must order values so as to accord to the most significant the highest place; and to the most abstract the lowest. This is not to lay a curse on matter, but

to remove the burden of significance which it has been unable to bear, but with which the modern world has cursed it.

Consequently the way is now cleared for the reinstatement of the reality and ascendancy of other views as, for instance, the aesthetic, the ethical, and the religious, which are now revealed to be no more and no less objectively or subjectively real than the physical. What is asserted in favour of spiritual values is that they are a more inclusive and therefore in the last analysis truer approximation of significance.

It is useless to appeal beyond the terms of common experience; for however unusual an experience, it must always be described in terms of common experience. This does not imply that science, philosophy, and religion must be homely, everyday affairs, but only that these speculations must be reducible to terms of common experience in order to be at all intelligible. It follows that something fallacious must be involved whenever a theory comes into conflict with the most basic human needs, or insults human dignity; since the very terms by which any theory must be stated are those which attain meaning only through the fundamental appetite of humanity—the impulse toward integration with all else, which is infinity. The criticism that such a view is essentially anthropomorphic, and that it is a pathetic error to attribute to nature the common experiential conceptions of humanity, is thus not a valid one. Nature is just the composite of the innumerable instances of this attribution; and the most abstruse mathematical formulations of physics are reducibly anthropomorphic. So we find such a distinguished mathematical physicist as Bridgman, in considering the general philosophical implications of the second law of thermodynamics, insisting on the relevance of the fact that “the human mind has, however, shown itself curiously unwilling to accept the prospect of a heat death.”²⁹

If the validity of the new physics is assumed, then physics has

²⁹ Bridgman, “Statistical Mechanics and The Second Law of Thermodynamics,” in *Science*, Vol. 75, No. 1947. Much else in this paper is of interest as bearing on this point.

proven our metaphysics. By the same token it has necessarily overthrown the old metaphysics; and this is the tremendous service which the new physics has unconsciously performed. The new metaphysics is bound to affect thought in every department of life; and therefore the new physics, not because of its scientific intention, but because of its logico-philosophical implications, will prove itself to be the most revolutionary turn in Western thought since the Renaissance. For it exhibits the process by which concepts become things, and therefore the necessity for the analysis and dissociation of concepts and the reforming of new without which no gain toward an intellectual progress can be effected. It plainly states that all concepts, whether physical or otherwise, are fictional crystallizations of meanings or relations which attain an undue hardness, essential but at the same time limiting to reason.

No bounds are thus set to reason, except the bounds self-imposed; but the limitations imposed by the acceptance of the old metaphysics of empiricism are swept away. When this destruction is completed and understood, it will be seen that the whole modern world-order was thereby annihilated and a new order begun.

CHAPTER IV

THE ARGUMENT FROM PSYCHOLOGY

1. PSYCHOLOGY AND METAPHYSICS

We have shown that the objective world is a composite of universals or concepts. In the last chapter we demonstrated through an examination of physics that even the most seemingly independent data are reducible to concepts about which agreement is the most general. So far, our argument has consisted of a reinstatement of the subject in the objective world, a revaluation of the known in terms of the knower; this argument left unexplained the subject end of the knowledge relation. If, as we have postulated, the data of experience are percepts and concepts, then we are confronted with the problem of percepts and concepts from the subjective end. how they arise, what is their relation to each other, and what is their discoverable function? The examination of these from the point of view of the subject as knower, or mind, will be the purpose of this chapter.

Physics can theoretically avoid metaphysics, psychology cannot. Into the actual occupation of the physicist with his subject-matter, metaphysics need not enter, and it is only in the interpretation of what physical findings mean that metaphysics is demanded. But in psychology this is not so. Epistemological assumptions determine the subject-matter of psychology, and so psychology, unlike physics, cannot even effect a hypothetical dismissal of metaphysics. Behaviourism, for example, is founded on that metaphysics which denies the existence of "mental events", and this presupposition confines the investigations of behaviourism to physical stimuli and physiological reactions.

The protest of the psychologists, in imitation of physics, that metaphysics is no part of their science indicates their curious refusal to examine the problem of what the proper

subject-matter of psychology is from a broad philosophical point of view and with true disinterestedness. Obviously it is of prime importance for psychology to determine its subject-matter. To do so requires an appeal to metaphysics. But as a matter of fact modern psychology has adopted a metaphysics. Its metaphysics is what we have termed physical realism, the reigning metaphysics of all the natural sciences: the theory that the abstractions of physics constitute the ultimately real. Psychology has likewise followed the empirical attitude of physics, the approach to its subject-matter as though that subject-matter were a set of irrational facts. In the psychological field this has produced some bizarre results. Psychologists are so eager to appear "scientific," which means eager to ape the success of physics, that they forget that success in any field must employ the technique germane to that field, and that the field of investigation itself determines this necessary technique. Success in one field through one method does not necessarily guarantee that the same method will produce success in another field. In what manner their metaphysical presuppositions have confined and stultified the various psychological schools will next be examined.

II. FUNCTIONAL AND INTROSPECTIVE PSYCHOLOGY

Functional or introspective psychology, sometimes called classical psychology, accepts as its metaphysical springboard the old dichotomy of mind and matter. Mind, in this metaphysics, is the mysterious entity to which the physical world assigns no place, and it remains a not quite real substance; matter is the stuff of the real world, understood by classical physics as extended particles in motion, or understood by modern physics as the background of pointer readings. Between mind and matter there is postulated an inexplicable causal relation, that is, the physical is conceived always as the cause of the mental. In this conception mind is a kind of reaction mechanism, but when the mechanism is described the description is always in terms of the physiological. Classical psychology

attempts to explain how physical stimuli are received by sense organs and transmitted by nerves to the brain where somehow these stimuli produce sensations of various kinds. Here the brain, which is the end of the physiological process, is confused with mind; and by some abracadabra physical events become or give rise to mental events, supposedly in a physical organ. Skipping over this questionable process, classical psychology supposes that each stimulus produces an atomic sensation, and that these atomic sensations are put together to produce percepts. The theory is that experience gives habitual meaning to a series of unrelated or atomic sensations until these become interpreted instantaneously in terms of meaning. This is the "function" called perception by classical psychology. Perception, then, is a function by itself, having no essential connection with, for instance, the emotions or memory. Similarly treated as categorically separate functions, are imagination, conception, fundamental instincts or urges, memory, etc. These functions are considered as elements of mentality, basically unrelated to each other.

Classical psychology is the result of its metaphysics, plus the scientific method of empiricism. No generalization as to what the whole mentality means or might be discovered to mean is allowed, since it is illegal according to empiricism to reason beyond the evidence of the imminent data; rather induction must concern the analysis of those data. In orthodox scientific fashion, therefore, classical psychology has made divisions of mental events and endeavoured to analyse each separate phase as a disparate brute fact. The acceptance of the physical as the real gives the clue to this psychology that the explanation of these data must be the discovery of their physical causes. Apparently, then, classical psychology is engaged in an attempt to explain the psychical altogether in terms of the physical, which necessarily supposes the mind to be an orientation and controlling mechanism for the guidance of the physical body in the physical world. It is hard to see what other general conclusions functional psychology intends

to make. If it intends a mere inventory of the mental world, its patchwork presentation yields no recognizable correspondence to individual experience; if it intends in imitation of physical science to establish mathematical laws (differential equations) for mental events, its success has been negligible. Needless to say, the conception of a reaction mechanism is ludicrously inadequate, not to speak of the fact that the psychophysical causality on which it is based has no intelligible definition.

Functional psychology presents the analogy of a passive sensitivity which merely responds to stimuli like a photographic plate. It thus leaves out the most imperative aspect of experience: the active selectivity and unity of consciousness. This psychology cannot show that determinate physical stimuli produce determinately psychical results, though it presupposes this determinism in its theory of atomic sensation. Experience never encounters that invariable sensation reaction; what it does encounter is reactions to *meanings* which vary for various occasions. An example of this is the noise of a pistol shot which will affect an individual according to the meaningful occasion; it may drive him into a state of hysteria; it may be taken as a matter of course; or, if he is sufficiently concentrating on something else, it may not be heard at all.

The meaningful constructions of sensations in introspective psychology are discarded in the empirical examination of consciousness in order to find the determinate reactions to stimuli. This division of mental events into mechanical reaction and meaningful synthesis accounts for the failure of classical psychology, and is curiously parallel in method to physical science which leaves out as spurious all sensational qualities in its empirical world. That psychology in so dividing mental events employs, like physics, a merely arbitrary criterion, becomes evident when inquiry is made as to how and at what point the distinction is drawn between meaning and mechanical reaction. In the example where the pistol shot had no determinate reaction, classical psychology would explain this as follows. The experiment would have to be performed under

"controlled" conditions in order to have any scientific value; in other words, the subject would have to be in a stated frame of mind wherein the emotional background would be "normal"; and in this situation the report of the subject on his mental reactions would be fairly uniform and would result in genuine evidence for a scientific measure of the acuity of hearing.

Here, again, as in physics, the stage is cleared to obtain results which it was determined in advance were to be found. For all emotional contingency is ruled out as extraneous to the category of sensation; what remains is the measurement of what was looked for. Obviously this is all logical manipulation; a placid emotional state is as definite an emotional bias as an active and powerful one, and so meaningful construction is by no means ruled out, but one particular meaningful construction is retained and all others ruled out. Even when it is admitted that a state of passive emotionality is the most common, our objection is still valid, and a "normal" emotional background still calls for explanation.

But is the distinction between meaning and sensation in any way allowable in psychology? We have already shown that a distinction between a sensation and a percept cannot be made, since every sensation, no matter how abstracted from its context, is in itself a percept, that is to say, it carries a meaning; otherwise it is hard to understand how it could be experienced. Consequently the distinction which classical psychology makes is *between meanings*, those more abstract and those less abstract. This may be a convenient division for certain practical purposes, but it is not a final and clear-cut distinction; to hold it so is to confuse and set at naught the examination of the data of consciousness. The content of experience is essentially unified; perception and emotion are not divided; and their division cannot lead to anything broadly true in psychology.

Is the method of introspection valid? This question brings up a further question as to what introspection is. Introspection by derivation means to look inward, that is, to examine percepts

and concepts, the data of experience *qua* data of experience, as opposed to the examination of percepts and concepts as the entities of the physical world. Therefore introspection is the subjective term for the only manner of knowledge; and so not only psychology but physics as well would be impossible without introspection. But to arbitrarily divide experience into sensation and meaningful construction of sensation, and to term the first the data of psychology which is properly examined through introspection, and the latter *not* the data of psychology on which introspection is allowed to operate, is to emasculate psychology and to lay the introspective method open to attack. Properly conceived, introspection is not only a valid method in psychology but the only method of knowledge

Summing up our criticism of functional or introspective psychology, we see that: (a) it is determined and restricted by its acceptance of the old ontological dualism of mind and matter and the empirical methods of the physical sciences; (b) it is confused in that it has no clear criterion for dividing its subject-matter in the way it does, i.e. its separate "functions" are logical categories and not empirically absolute; (c) it is inadequate in the sense that it does not represent human behaviour and experience in any way either familiar or broadly useful, first, because it represents a mental life departmentalized into a series of unrelated functions, whereas experience is unified; and secondly, because it leaves out the most evident fact of experience. the selectivity or purposiveness of consciousness. This omission is crucial and clearly shows that functional psychology does not say anything regarding entire man, since all sorts of "urges" are listed except the urge which gives significance to the whole of experience, namely, the urge toward the infinite. By ignoring the consideration of this purposiveness, psychology renders all its findings sterile and hopelessly unrationalizable.

III. BEHAVIOURISM

Behaviourism accepts as its metaphysical ground physical realism; but it rejects consciousness or mind considered as

an entity. Thus sensations are either non-existent or epiphenomenalistic, negligible mental by-products of physical interaction, whose presence would be a deterrent to a study of behaviour. Behaviourism thus reduces psychology to a branch of physiologic science: the branch which has to do with the nervous system. Such a study may or may not be valuable to physiology, but it leaves psychology unexamined.

That there can be a scientific study of psychology as an examination of mental events is denied by behaviourism's acceptance of a mechanistic monism. This is, of course, a logical conclusion from its premise, but constitutes an absurdity inasmuch as the premise itself is an absurdity. Behaviourism accepts as evidence the experimenter's observation of the behaviour of the subject experimented on. This observation must be reported by the experimenter from a recital of what he perceived; then why should the recital of what the individual experimented upon perceives be rejected?

But what is pure behaviour? It cannot be described except in purposive or teleological terms, which after all are judgments. When a behaviourist recites the results of an experiment, he constantly makes judgments concerning the purpose of the observed subject's actions, for instance, the *excited* movements of rats in a maze. It is fairly obvious that if it is illegal to postulate purpose in observed subjects, then no statements about anything can be phrased in psychology or anywhere else, for not only would purely descriptive observations yield no conclusions, but description itself would be impossible. It may be concluded, then, that although behaviourism, if it drops its absurd metaphysics, might be a useful branch of a useful science, it has no standing as a psychology.

IV. FREUDIAN PSYCHOLOGY

Freudian psychology may be divided into theory and practice. In practice it is a psycho-therapy, a kind of faith-healing claiming cures, comparable to the cures effected by *il Bambino* at Rome and Notre Dame of Lourdes. We shall not go into

a discussion here of what such a practice means; we shall confine ourselves to an investigation of the principles and theory of the psychology itself. As a theoretical psychology, the work of Freudians has never been definitely formulated; and Freudians do not agree as to its formulation; yet the same basic principles and attitude underlie their several theories. At bottom, Freudian psychology accepts the metaphysics of voluntarism, with *will* as the ultimate dominant force as opposed to reason. Such is, in effect, the philosophy of Schopenhauer and von Hartmann, with the latter's concept of the *unconscious* accented. This metaphysics is not altogether explicit in Freud, who uses many terms in place of the old metaphysical concepts, e.g. *libido* for cosmic will; the *sub-conscious* for the unconscious, the inhibiting force of rational and organized society, and sometimes the *censor* for reason. At times Freud seems to proceed on the assumption that physical realism is ultimate; and yet his whole psychology is built around the libido as ultimate, which seeming contradiction introduces some difficulty in clarifying the presuppositions of his psychology.

Freudian psychology starts with the libido as the driving urge of the individual. The libido is most clearly exemplified in sex and is usually identified with it. In the theory this dynamic principle is in constant conflict with the rational forces of society, which, impressed on the individual in childhood, create a repressing mechanism in the mind, called the censor. The repression of the initial libido is never completely possible, so that it expresses itself in symbolic and sometimes greatly distorted forms. As examples of the symbolisms of repression, Freud points to psychopathic cases,¹ the content of dreams, common slips of the tongue, humour, and all sorts of symbolism in the various arts, and especially in mythology. These, according to Freud, are all sly expressions of the libido's attempt to get past the repressive mechanism. The

¹ It was in the treatment of psychopathic cases that Freud was started on the path to a theoretical psychology.

partial repression of the libido is explained by a subconscious mind where semi-repressed impulses of the libido lurk, awaiting an opportunity to spring into conscious fulfilment.

A cursory examination of Freudian psychology will reveal at once much that is both true and valuable. In the first place, this psychology deals with the mental life as a unified dynamic whole, which corresponds far more to individual experience than does the treatment of classical psychology. Secondly, its voluntaristic philosophical basis which opposes will to reason, holds, as we have stated in Chapter II, a most important half-truth, namely, that reason is obviously not allowed to function unhampered, but that, on the contrary, common experience is chaotic and passionate. Any philosophy, and by consequence any psychology, which overlooks the truth of this must be considered guilty of blind rationalism in the presence of confusion, and failure, in the experiential world. In the third place, Freudian psychology has reinstated the very important part played by symbolism in mentality. The fourth gratifying aspect is its insistence on repression as a factor in the mental life; though just how basic is the factor of repression has not been correctly emphasized.

What is valuable in Freudian psychology is extracted with difficulty from a mass of unassimilated, uncorrelated, and contradictory reasoning. From the evidence adduced by Freud and his followers to prove or illustrate their theories, they have selected only those facts which are likely to seem favourable; and all the rest from which nothing can be made they have ignored. This loose logical procedure does not stop here, but allows the multiplication of entities not only beyond necessity but almost without limit, such entities as the *id*, the *libido*, the *complex*, the *subconscious*, etc.

The use of the term, libido, or the sexual urge to include practically all human activity as the motivating power, renders the term meaningless. The logical effect of making all things sexual is to render sex itself indefinable. There is no trick in explaining all mental phenomena in terms of sex, or for

that matter in terms of anything you choose, provided you are willing to play fast and loose with language and allow your imagination full sway. Thus, if you please, all acts can be interpreted symbolically as sex acts; but such an interpretation changes the definition and therefore brings up the question again of what sex is.² For sex, as it is commonly known and defined, is not by itself a pure emotional experience; it is always inextricably fused with rational ideas or concepts. The sexual emotion is like every other emotion: an ideal term, and no more encountered absolutely in experience than "pure" hatred. When you hate a man your hatred is directed by some particular rational idea, that is, you hate him for some particular reason, even though that reason is not always admitted. Likewise with sexual desire, ideas qualify that emotion too. This illustrates the absurdity of choosing sex as the basic urge and opposing it to reason. Reason, as the social factor which inhibits the libido, is equally an absurdity. Besides what is rational, there is certainly as much of the passionate and irrational in organized social activity as there is in individual appetite. The separation of the individual as primarily appetitive from social life as primarily rational, is too facile to have any value, and bears little or no relation to the complexity of the situation.

The subconscious is another convenient entity made use of by Freudian psychologists to explain the repressive psychosis. It must be admitted that there are degrees of consciousness and that there is unconsciousness; but it must also be admitted that it is only in terms of the conscious that knowledge is possible. The unconscious is a valid category, inasmuch as it is simply a negation of consciousness; but to posit levels below consciousness, as in the *subconscious*, is to posit a definite location for thoughts when they are not present in

² Some of the Freudian school postulate other urges than the sexual as dominant, but the identical criticism which we cite against Freud may be levelled against them also. If the will to power be selected as dominant, for instance, then the will to power, as applied to all human activity, becomes so general as to lose its definition.

consciousness. It is thus to reify and spatialize both thoughts and consciousness, which is the most vicious hypostatization.

We gather from Freudian psychology that repressions occur in mental life only when the libido interferes with the established customs and beliefs of society. The exact inference from Freud in this regard is hard to draw, because he seems to state at times that the repression of the libido is disastrous to the individual; yet he can hardly mean that all the desires of the individual must be fulfilled unconditionally. He fails to see that repression is at the base of consciousness and indeed makes it possible. Selectivity or attention demands by definition a repression of all else other than what is selected; and a desire or a concept is what it is through the partial repression of all else. Here we touch the basic principle of all experience.

We must conclude that Freudian psychology, when viewed in its entirety and in its effect on contemporary thought, turns out to be a hopelessly illogical mixture, inimical to reason. It is irrational from its source in voluntarism, and it further complicates its understanding of the mental life by a subscription to physical realism, a metaphysics which is directly opposed to the idealism that a thoroughgoing voluntarism embraces.

V. GESTALT PSYCHOLOGY

In discussing gestalt psychology, we have taken Kohler's work of that name as a definitive statement of the system. Gestalt psychology is an offshoot of classical psychology and accepts the same metaphysics, namely, physical realism. Thus it is committed to the psychophysical theory of perception; but it modifies the mechanical explanation of the physiologico-neural processes to what Kohler describes as the dynamical theory. This dynamical theory denies that stimuli, which are received by sense organs and conveyed to the brain, as it were, by conduits, are registered there, so that stimuli make

a mosaic pattern on the brain. He rather believes that some such process is in operation as takes place when a physical event is allowed to occur freely and to reach its own equilibrium. This according to Kohler does not lead to chaos but to a certain order.


Gestalt psychology proper mainly differs from classical psychology in believing that percepts are not built up from atomic sensations but are organized wholes. It thus takes issue with classical psychology on the question of where or at what point meanings enter into perception. Introspective psychology states that organized wholes are meanings constructed by the relating of atomic sensations through continual usage, whereas gestalt psychology claims that organized wholes are *not* meanings but are the basic data of perception, which meaning may or may not embellish. This general idea is elaborated into a theory that behaviour and experience are explicable only in terms of mental organization.

The value of the ideas introduced by gestalt psychology are so important that we feel compelled to point out its errors before elaborating on its merits. What hampers gestalt more than anything else is its naive acceptance of physical realism together with the consequent psychophysical theory of perception. This metaphysics involves gestalt in a tortuous explanation of the physiological process which underlies mental events. The theory of this physiological process is founded on a fallacious analogy of psychology to physics, and at bottom is not strictly pertinent to Kohler's psychology, though it gives it the desired connection with physical science and thus makes it seem more strictly scientific than it would otherwise seem.

Kohler distinguishes between topography and dynamics in physics, and compares them with neuro-cerebral processes. According to him, classical psychology conceives the whole nervous system as topographical, and as simply conducting the dynamics of the physical world into set channels, the whole process being comparable to the dynamics of an explosion

within a cylinder where the cylinder is so topographically arranged that only one set avenue of escape for the dynamic principle is allowed. This topographical analogy, he says, is a mistake. The topography of the nervous system is not the determining factor in the mental life; and channels or conduits must be abandoned as analogies. The mental processes are occasioned by dynamics, comparable to what takes place when the explosion of a gas is not channelled as in a cylinder. It is hard to discover the validity of Kohler's distinction between dynamics and topography in physics, since, plainly, no actual physical event is ever free from what he terms topography. The topography of the neighbourhood of an explosion is always a determinant factor in every such event not ideally postulated. The topography is indeed part of the dynamical event. Such a distinction is not only invalid in physics but utterly confusing when applied to the physiological system which is supposed to underlie sense perception. Obviously this argument of Kohler's has no justification except to give a physical background to his theory of organized wholes. But the entire question is one to be settled by physiology, not by psychology.

Regarding gestalt psychology proper, Kohler draws a positive line between the perception of unified wholes and conceptual meanings which may become seemingly part of such a perceptual whole. Thus he says that one does not have to know what a pencil is used for to be able to see a pencil as a unified configuration. By what criterion the distinction is made between a perceptual whole and a meaning, is not made clear. It is our contention that no such distinction can possibly be valid. It is curious that Kohler, who refuses the distinction made by introspective psychology between sensation and perception, falls into a similar error in his own definitions of perceptual wholes and meaning. Possibly the cause of this error is that Kohler never exactly defines the term, meaning. What other definition could *meaning* have except the representation by a thing of relations beyond? Kohler would perhaps admit this

definition, but would certainly restrict it to the more obvious meanings. He says, "sensory units may have acquired names and may have become richly symbolic in the context of our knowledge, while existing, nevertheless, as segregated units in the sensory field prior to such accretions."³ A single example will prove this statement mistaken.  Even a two-year-old

child will see the accompanying pattern as a man, even though the child has not "learned" that this is a symbol. Indeed, it is doubtful whether a child could see this pattern as anything else. It would require education to see it otherwise or to know that it is a symbol. A pencil is a meaning in that it refers to the commonest use of the object; nevertheless, the configuration minus this concept is still a meaning, inasmuch as its colour, size, shape, etc., can be defined, that is, can acquire meaning only in their relations to other things beyond. To go further, its meaning as a discrete entity is not definable by itself but by the quasi suppression of all else; and so a discrete entity with all other meanings left out acquires definition by what it is *not*, in logical relation to all else. It is, then, hopeless to look for percepts without meaning, just as hopeless as to look for atomic sensations without meaning. Meaning is irreducible, and, as we noted in Chapter I, perception and conception are essentially the same process. Strict empiricism will have to admit that, although there are grades of abstraction from meaning, there is a minimal limit; and at the bottom of the whole process, meaning still persists as discrete unity.

The big contribution which gestalt has made to the science of psychology has been made without full recognition of its proper value. Kohler fails to see the universal applicability of his main principle because he refuses to admit the existence of meaning in perception. However, gestalt psychology gives an intelligent correlation of the disparate "functions" of classical psychology, such as attention, will, consciousness,

³ Kohler, *Gestalt Psychology*

emotion. If throughout gestalt psychology *meaning* be substituted for *organized whole*, then Kohler's conception practically coincides with the one we have set forth in Chapter I, namely, that the individual always reacts to meanings and not to things, and thus may react to the total meaning of a situation without necessarily taking account of its partial aspects. This provides for the most obvious fact in mental life: the fact that emotions or concepts are not tacked on to the perception of things but the whole experience is integral, and thus these "functions" are but abstracted logical categories, useful only in analysis

If Kohler had not embraced the metaphysics of science, if he had not been so eager to force psychology into a close imitation of the methods of physics, he would not have been compelled to veer away from the importance of organized wholes as meaning: he would have seen that all the evidence which he adduces to prove his theory would equally well sustain the theory of meaning, and he would have found a wealth of other evidence in common experience which he necessarily has to overlook because of the restriction which he imposes on his theory by categorically dividing organized wholes from meaning.

VI. THE PROPER SUBJECT-MATTER OF PSYCHOLOGY

The understanding of the proper subject-matter of psychology calls for a clarification of terms. There are no psychological facts *per se*, just as there are no physical facts *per se*. We have shown that natural science deals in percepts and concepts as though they were independent objects of knowledge, independent, that is, of the subject. These percepts and concepts are included with all others in the data of psychology, but approached from a different intention than that of physical science, namely, to discover their relation, as knowledge, to the subject. The distinction between objects of knowledge and knowledge is one which we do not admit as aught but different

abstractive attitudes; thus physics and psychology have a common subject-matter in the data of experience: the one omitting for purposes of study the subjective end of the knowledge relation; the other omitting the objective end.

It follows that physiology, which is a branch of natural science, dealing with its data as objective, can tell us nothing about psychology, nor can the physiological be the cause of the psychical, if an ontological dualism of two prime substances, mind and matter, be denied. Our whole argument so far has been to show this dualistic conception fallacious and untenable. The physical as the cause of the mental is comparable to the employer as the cause of the employee; each term is equally demanded by the other.⁴ The subject as the knower and the object as what is known, do not stand in a causal but in a logical relation.

THE PSYCHOPHYSICAL THEORY OF PERCEPTION.—It is of the utmost urgency to untangle the fallacy implicit in the psychophysical theory of perception, since this is the main prop of the belief in a basic dichotomy. Superficially the theory seems plausible enough; but this is because the consideration of it is obscured by the complicated conceptions necessary in order to follow it through critically. The question is entirely begged; yet the sharpest attention is required to determine where this occurs. We shall present the psychophysical theory of perception as set forth by Kohler, who states it practically in the same manner as it is stated by Bertrand Russell. Briefly, this theory is as follows. If you see a red apple, you see it in perceptual space. The apple as a physical reality (that is, the independent, ultimate reality) is in real space, but you do not perceive it. The "real" apple is the cause indirectly of your perception through events which take place in real space, in your brain. These physical events which take place in the real space of your brain are not perceived either, but are trans-

⁴ If this sort of relation be termed causal, causality is reduced to the most vague concept, meaning any sort of association into which a temporal sequence can be introduced

lated to the real physical object in real space, although that object is seen as a perceptual red apple in perceptual space.

There are many critical statements which can be levelled at such a theory; but the one that cries for expression is that the whole conception of "real space" is purely *ad hoc* and adduced to save the theory. By defining real space as it is defined in this theory, it is put for ever beyond verification; for what you perceive can never be real but must always be perceptual. If it be insisted that the instruments of physical research determine real space, we must repeat that all physical measurements are in terms of space- and time-intervals which find their definition in terms of perception. Thus the theory confines itself within a vicious circle. The same argument applies to the objection that it takes time for a stimulus starting from a physical object to reach the brain. Here again time-intervals are illicitly taken as ultimately given, instead of being what we have shown them to be, namely, the judgment that here-now and there-now have different perceptual values. The judgment of separation in space is a temporal judgment, so that the statement that a certain time-interval must elapse for the perception of any object separated in space from the observer is not surprising. It is like wondering why there should be seven days in a week. There is one other objection to be met: the contention that, in the case of vision, for instance, the perception of the apple may be shut off by interposing some screen, such as the eyelids, and that therefore the cause of the perception of the apple must have originated in the apple. But this objection also begs the question; for it fails to consider that the blotting out of an object is itself a perceptual experience and thus is on the same plane as the other perception. In general, all arguments brought up in support of the psychophysical theory of perception slip in unnoticed a perceptual element as real. But as we have shown in Chapter I, you cannot find the real as long as your evidence is confined to what you admit to be only the effect of the real, since what you postulate as the

cause is again merely the effect of something beyond, and so *ad infinitum*. The psychophysical theory must, then, take for granted what it strives to prove.

There is no real space as opposed to perceptual space; indeed, we do not believe that real space can have any intelligent definition, since the concept of space itself arises from perception. If all space is perceptual, this consideration calls for a drastic reinterpretation of such an experience as, for instance, the perception of a red apple. The perception of a red apple involves the gathering together of meanings into a unified whole. It may include any number of what are ordinarily termed emotional, or subjective, values; but it certainly holds the more abstracted meanings for all observers. One of these meanings is its spatial position; but this meaning, for example, like all others, can be specified only by the relation of the apple to other things. In the perception of the apple, certain meanings which are what physics terms light waves, are quasi-tactilely associated in a certain way with the meanings that physiology terms sense organs and the nervous system. These meanings are not the cause of the perception but the necessary part, since their presence is the signal for other meanings. Thus it is not waves in the ether which cause the sensation of light but quasi-tactile meanings (force),⁵ which, by invariable association, give the visual meaning. Red is not a mental thing, as opposed to waves of 7.2×10^{-5} cm. frequency, but "red" and "light waves" are two meanings among an infinite number. Red is not within the mind, but where you see it, realized only through association with the quasi-tactile meaning (light waves) which signals or suggests it, just as red itself may signal or suggest some other meanings, such as ripeness, and the whole apple may be the signal for other meanings indefinitely, until the apple as an entity gathers together meanings which include a vast group of relations. Or the meaning that is conveyed by the red apple may be abstracted to a point where only its meaning as a discrete

⁵ Cf. discussion of force, p. 169

entity remains. But between discrete unity and universality of meaning, the perceptual process may stop at any place.

“A primrose by the river’s brim
A yellow primrose was to him
And it was nothing more.”

It must be repeated that the meanings termed light waves are not reality as opposed to appearance, but are, like everything else known or knowable, meanings which are fictional in themselves because they have been selected out of a totality of possible relations, relatively true, in so far as they refer beyond themselves. It must further be understood that the sense organs and the brain are just such meanings, similarly constituted, and that it is impossible to go beneath such fictional entities to find another reality. The physical by itself is an impossible conception.

But the mental by itself is also an impossible conception. Thus to look for mental events in perceptual space is an absurdity, for the very perceptual things which you would examine are themselves mental events viewed from the psychological abstraction. Mind is not an entity having location, but a convenient logical term. Thus, in a sense, behaviourism is justified; and as long as the physiological is being examined as an objective affair, no mental substance can be postulated. Equally, as long as the mental end of the knowledge relation is being examined, physiology cannot be brought in as a consideration. Thus no causal relation exists between physical and mental, and no mysterious parallelism, but only a logical equivalence.

To clarify the psychophysical relation, we shall give three examples taken from three different points of view and then analyse and compare them.

(a) *The Physico-physiological.*—Let us suppose that scientists observe what occurs when a man sees an apple and picks it up, as follows. Certain events, called light waves, travel from the object to the man’s eye and effect certain chemical

changes in that eye which give rise to an impulsion that travels along the optic nerve to the brain. This occasions further physiological events in the brain, which in turn give rise to an impulsion which travels along the nerves to the muscles of the arm and hand, consequent upon which certain muscular movements occur, resulting in the contact of the hand with the object.

(b) *The Psychological*.—To give a psychological account, the subject of this experiment describes what happened as follows. He said that he perceived a red apple at a certain distance. When asked to analyse this perception, he said that he had had a visual sensation of a certain pattern which was separated from him in space, and further that this sensation was generally that of red in which certain parts were brighter than other parts, which differentiation in colour led him to an interpretation of a certain spheroid shape. The shape and colour, he stated, he associated with similar objects which in past experience he knew under the general classification of apple. He said he felt a certain urge toward the apple, a vague tension in arms and hands, immediately followed by sensations of movements of arms and hands towards "the apple." He felt, on grasping it, certain sensations such as smoothness, resistance, and coolness.

(c) *The Common Experiential*.—Let us suppose the subject of the first example is not a psychologist, but an ordinary individual who reports his experience as follows. He said that he saw a red apple at a certain distance from him; he felt the desire to pick it up, and in fact did so, feeling it with his hands.

In examples (a) and (b), there is no final difference in the kind of experience, since both are concerned with the perception of events in space external to the knower or mind. The difference consists in merely a difference of attitude, which in the case of (a) is interested in certain aspects of a situation, and in the case of (b) in certain other aspects. (a) is concerned with some concepts which (b) does not take

cognizance of; and (b) is concerned with some concepts which (a) does not take cognizance of. Thus in (a) the events are treated as though they were independent of the knower or mind, whereas in (b) the events are treated as altogether dependent on the knower or mind. (c) is the attitude of common experience which emphasizes neither end of the knowledge relation, but treats the whole relation as integral.

The point to be remembered, if this perplexity is ever to be untangled, is that in all three examples the observation is of the *external world*, since a sensation in the hands, for instance, is certainly like a sensation of colour in that it is external to the knower and in the same kind of space. There is no internal world, only a knower as the other end of knowledge relation, to which all known things are external. Even the vaguest kinaesthetic sensations are in the body which is part of the external world. Thus *subjective* experience is a confusing term, since it refers both to the knower and to the body. Strictly, subjective must refer to the knower, not to the body. From this point of view the colour, red, is as subjective (that is, dependent upon a knower) as coldness. But to the knower both are objective.

To sum up, in all three examples the same knowledge relation obtains. In (a) the scientist as knower is the subject; and the physico-physiological concepts abstracted from the percept are the object. In (b) the man (a psychologist) as knower is the subject, and the psychological concepts abstracted from the percept are the object. In (c) common man as knower is the subject; apple is the object (i.e. the conflux of concepts which common experience calls an apple). The same percept is the original datum in all three examples, though different concepts be abstracted from it.

It should now be clear that behaviouristic psychology, which strictly follows the method of physical science (as exemplified in (a)), cannot touch the mental; also, why physiology introduced into a psychological examination (as in (b)) is a confusion; and finally why common experience (as exemplified

in (c)) is the touchstone for (a) and (b), of which they are artificially segregated halves of the unit of common experience.*

The proper understanding of subjective as denoting a knower not a physical body, explains why the observations of your own experience and the behaviour of others are not essentially different, both being the objects, for the knower, of events in the external world. The distinction between your own experience and your observation of another's behaviour is one of greater profusion of percepts. For instance, a man perceives another's embarrassment by his gestures, his halting voice, the touch of colour in his cheeks, etc. His own embarrassment is made evident to himself by some of these, as his voice and gestures; but he also perceives the tension in his muscles, the dry sensation in his throat, the sensation of pressure of blood in his face, etc. We may conclude, then, that there are no absolutely private perceptual worlds; and that therefore it is not so surprising that one individual can understand another individual, nor, for that matter, that one's sympathy for another is limited.⁶

THE KNOWLEDGE RELATION.—What, then, is the significance of the knowledge relation? This question leads to a consideration of what is meant by the logical term, mental, or, in other words, by the knower, and why there should have arisen the dualism of subject and object. This question, in turn, brings up the problem of what the bodily organism is and the concept of the individual as individual.

In the first chapter we set forth the hypothesis that the fictional concept of discrete being arose out of basic unity in the same manner as if a certain plane were cut through a cube in which all possible planes existed undefined. How this breaking off or separation of being arose, remains a mystery. It will, however, be admitted that the defining of a plane in

* For the suggestion that the observation of one's own experience and another's behaviour have much in common we are indebted to Kohler, even though his explanation of this is not the same as ours, and other conclusions are drawn from it

a cube in which all possible planes exist undefined, immediately sets up a spatial orientation and a dualism. For where a plane is cut, all other specifications are viewed as in relation to it: far, near, high, low, at right angles, etc. An individual being is just such a decision from an infinite manifold; and therefore all else is assigned spatial relation in regard to that individual's here-now. But just as nothing else can be exactly here-now for that plane or decision, so all must be external to it. This decision is equivalent to the term, mind, as we have used it. It can no more look inward on itself than an eye can look inward on itself. If it be objected that such a conception is a thinly disguised "soul," and empirically unjustified, we must emphatically reply that the knower is the most undeniable empirical fact there is. "Soul," like knower or mind, is a convenient term to denote one end of the knowledge relation, and is valid as a logical term but not as an entity.

The question, then, is inevitably brought up, if the mind or knower is not identical with the body, why does it seem to be so closely identified with it? The body is that portion of all else besides the decision, which is most closely associated with the perpetual definition of that decision, that is, most required to perpetuate the fiction, and has substance, along with other things which have substance, because of the habitual necessity for the maintenance of decision. The bodily organism differs from what is termed inert matter, in that it tends to preserve its self-determined tension by continually taking from all else what it requires to do so, and by throwing off what is harmful, inimical, or useless to it. The body's decision from all else presents itself as a sensitivity and a jealousy as to its discreteness, which is most apparent in what is called the sense of touch. Thus its identity lies, not in its retention of the same physical constituents but in its tendency toward the retention of a pattern.

The body is the fictional representation of that which is required to preserve the fiction of the individual being; and it is reified or substantialized in order that it may continually

render this service with minimum intrusion on the more significant aspects of being. When this tension is no longer supportable, death occurs; for without this reified shell the fiction of discrete being disappears and the individual "dies," that is, his being loses definition and lapses back into the equilibrium of infinite being.

The substantialization of the bodily organism and other things is merely the reduction of certain imminent and necessary meanings to the value of common agreement. To preserve a fiction, or to make a fiction substantial, requires the common consent of all individuals. All classes of organisms, such as plants, animals, human beings, etc., must be accorded recognition as organisms in so far as they are similar fictions and reflective of a similar original orientation. For instance, all beings that we call human beings are so because they mutually recognize themselves as such; and for human beings other animals are in some ways similar and in some ways different. Our point is that if they were altogether dissimilar, they could never be recognized as organisms.⁷ The organisms which we recognize are a second order of hypostatizations where identity attaches as a form to a flowing pattern which is then termed animate, whereas inanimate matter is of the first order of hypostatizations where no form or purpose may be predicated to give identity to a series of patterns which thus seem unrelated and inanimate.⁸

To "put into the world," or substantialize, is equivalent to the process of socializing. Things are but completely socialized meanings. The human body is a socialized concept and not an individual one, mankind is the unit of human material

⁷ There is more than a hint here for an attack on evolution as it is at present understood and a basis for a fresh theory of evolution.

⁸ Such an identity as a river is a sort of intermediate order of hypostatization, for its identity attaches to a form. Many peoples have considered rivers animate, and even to-day in ordinary speech they are often personified. But because there is no apparent self-determination to a river, no obstinacy in favour of a certain form, it is not generally conceived as animate.

consistence. To give this argument another twist, substantialization is the attempt to save meanings against time, i.e. to make them *valuable*, although the value reduces to the mere value of continuance. In the last analysis, then, substantialization is human agreement; and so the judgment of physics to the effect that universal agreement is the test of the independent existence of data is not altogether wrong: it does not operate on phantasms. Nevertheless, since what it operates on have been humanly conceived as independent, its objects are "human" objects from the philosophical point of view

What is the self? It cannot be the same as the body, for a body may undergo change through growth or decay or accident beyond recognition, yet the self continues, and, conversely, there are cases of dual personality where the whole self seems to be lost and another self assumed without any apparent somatic manifestation. The self, which is what we have designated as the subject, the knower, and the mind, is not an entity but is a fictional division, a reference for orientation, like a point in geometry. This point never varies in itself, but inasmuch as a point has none but an ideal existence the self must be thickened by affective *states* which may vary but are always strictly external to it. For instance, when intensely aware of danger the self seems to contract and harden, and to become more and more conscious of its discreteness, whereas at other times the self seems to diffuse and almost to lose its discreteness.

But the most obvious fact about the self is its identity, and indeed the self is little more than an identity. The question then arises, if the self is an identity, what remains identical of the self? The self has identity only in time, its identity is historical or temporal. But what can a historical identity consist of, since we have shown that time is a concept wholly dependent upon the endurance of identities? A historical identity is an utter fiction, a set value which has the value only that it has been set, in comparison to which other values are adjudged. Thus for the self to be realized, a spatialization

and a temporal sequence are required for all other relations. The historical identity of the self is realized or perpetuated through the meanings which it saves from the spatial partition called the past; memories which are never a part of the self are all that continue the fiction of the self. In this way all else may change, but the strict self never changes.

Let us succinctly repeat our conclusions as to the subject-object relation, and as to what this relation connotes. The self or subject is the fictitious break in basic unity which yields a reference point around which all else is grouped and in terms of which experience is evaluated. The object is the distortion of basic unity from this limited viewpoint. In other words, the limitation thus set up yields out of all possible relations only certain relations; and this is in itself a distortion—spatializing and temporalizing basic unity. The physical part of the objective is those imminent and necessary meanings which through long usage and social agreement have taken on a hardness and quasi-independence so that they may be dealt with as standard counters in experience, though embroidered with other meanings. The body is that part of the physical which is required for the perpetuation of the self while remaining external to it. The brain and the peripheral nervous system are parts of the body which, in this elaborate symbolism, are the co-ordinating and controlling functions.

We must explain that what we have here been setting forth is not under any consideration to be misunderstood as a mentalism; it is rather an objective idealism, or, better still, a panrealism. For all meanings are real, since they are partial views of basic unity; but at the same time they are fictional in so far as they are limited or perceived from a partial viewpoint. Because of the limitation imposed by the fiction of self, a spatialization and a temporal succession, with a consequent partitioning of knowledge according to value into past, present, and future, have been set up. Yet these divisions of basic unity tend somehow to come back together in an effort toward unity. But if experience is fictional and partial, it is a fiction

and a part of basic unity and is itself therefore real. Thus all experience is real, the partial reality which human beings may know and which they may never get beyond. The dualism of subject and object holds for experience, but requires for its explanation an ontological monism.

It should now be plain that the proper subject-matter of psychology is all experience whatsoever in its temporal succession, from the viewpoint of the subject. The approach of psychology must be from the position of the knower, operating on the data of the flow of experience as it appears to his unit of apperception. Thus it is the same data that is utilized by the physical sciences, but differently regarded and from which wholly different abstractions are taken. For example, a table may be the original datum of physics; from this datum physics might abstract the concept of length in feet, which is considered as an atemporal fact existing altogether at once, and not considered from the standpoint of any one observer. For psychology, on the other hand, the table must be a datum from the viewpoint of only one observer at a time; and the individual judgment of length would then be the abstraction that psychology would be interested in, treating the table not as a thing known but as evidence of the fact of knowing. Both viewpoints, that of physics as well as that of psychology, are purposely artificial and purposely cover only a certain artificial half of experience which includes the whole knowledge relation as a unity, and which rightly makes no distinction between a thing known and knowledge of a thing.

This explanation should clear up some of the confusion as to what psychology can and cannot investigate. It can investigate the experience of the individual through his introspection, that is, his own report on his experience, and also the behaviour of other individuals, including animals, since we have shown that there is no intrinsic difference between reporting on your own experience and on the behaviour of other individuals: both are introspective (as demanding a knower) and both are behaviouristic (as examining data external to that knower).

Psychology cannot examine the mind, since it is the mind which examines the datum of psychology; and a mind cannot look inward on itself. It cannot properly examine physiological data, since physiological data are only physiological from the abstract-objective point of view.

It has been said that psychology is the study of consciousness; but consciousness in this connection is indistinguishable from mind. We shall have to amend this to read that psychology can examine the data of consciousness but not consciousness itself. The subconscious, or the unconscious, is thus by definition no part of the data of psychology, since it is only known to psychology by logical inference. The very concept of the unconscious arises from an analogy to physics, an acceptance of physical realism which supposes that all things, perceived and unperceived, have absolute spatial location. We have shown this to be an impossibility, for without a subject the postulation of objects has no meaning. Thus the unconscious is simply a logical category for the unknown-to-consciousness. The concept of the subconscious begs the metaphysical question by treating thoughts as though they were somehow extra substances, or postulating an epiphenomenalism.

The limiting of psychology to the data of consciousness does not entail the judgment that nothing exists except what is presented to consciousness. Relations are infinite, as the limited set of relations which is experience indirectly proves. But that any relations can be known except in and through experience, we deny. We are here merely calling attention to a truism.

If it be understood that the data of consciousness are only a limited set of relations taken from an infinite number, and that this set of relations must refer beyond themselves to acquire meaning, then it follows as a necessary consequence that the content of mind is always connected with much that lies outside. To call this connection a subconscious mind is, first, to confuse mind with the content of mind, and, secondly, to assume that the content of mind has no relations beyond. The distortion consequent upon the selection of certain

relations and the accompanying repression of others, accounts "on the one hand for symbolism, and on the other for the Freudian "subconscious."

As long as final causation is supposed to be excluded, the science of psychology cannot advance very far toward the understanding of the mental life. The mental life is itself a purposive activity, or it is meaningless; and to close your eyes deliberately to the attempt to discover what this purpose may be is to render all other subordinate facts inexplicable. A thoroughgoing empiricism which would take under consideration all evidence whatsoever could not possibly dodge the fact that experience presents itself as a direction toward some end.⁹

Positivistic psychologies, which is to say all schools of "scientific" psychology, make all psychological facts of equal value by their narrow empirical viewpoint. The aesthetic impulse, for instance, is accorded by psychology no more importance than the impulse to blink the eyelids; in fact, the question of value does not enter into psychology at all. Yet if we are correct, the question of value is the whole question of mentality; and mentality cannot be understood apart from it.

The aim or direction of the mental life seems to us so obvious that it could only have been excluded by an obstinate determination to leave it out. This aim or direction is a continual selectivity which is a selectivity of values, a continuous search or quest for the most inclusive meanings, which quest at the same time is hindered by the necessity for preserving the discrete identity of the self. Yet the search goes on, in spite of such deterrence, by the reifying of these imminently necessary but unimportant meanings whereby they are re-

⁹ If empiricism had been thoroughgoing, we would have had to accept it perforce. Our quarrel with empiricism has been that it has wilfully blinded itself to some of the facts of experience. In its passionate reaction against pure reason, and in its zeal for hard stubborn facts, it has overlooked the most important part of experience, thus forcing a mechanistic teleology.

moved as much as possible from attention and assume a mere historical identity. This process frees the mental life to some extent for its selection of a higher synthesis, and for its search for more inclusive values. Held down as mentality is to a finiteness in its search for value, for more inclusive meanings, it must spatialize meanings and conceive of itself as at rest while all else flows by in a temporal sequence. In this distorted manner, those meanings which are more inclusive are retained or referred to what has gone by; and all others are dropped, since identity eventually refuses to attach to all except the more inclusive meanings.

This selectivity or search for significance, which is always a compromise, tends to combine the greatest amount of meaning with the least amount of discreteness. With this ruling principle of the mental life as a key, all disparate mental facts or functions are assigned their respective places. In this way it will be immediately seen that in perception qualities of objects are simply abstractions, or lesser meanings, from more inclusive abstractions or meanings.¹⁰ For instance, in the perception of an American flag, "blue" is not a quality which goes to "build" the perception but is an abstracted meaning from the larger meaning, "American flag," and when abstracted is a meaning by itself. Similarly, viewed from the psychological angle, the function of perception is not built up by the function of vision, but vision is an abstraction from the larger perception and is itself a perception. Perception is an integral process in the mental life, from which such a science as functional psychology has merely abstracted certain aspects and termed each of these a separate function. This will be evident from an analysis of perception.

As an example for analysis, let us take the perception of an American flag. It is at once evident that this object may be seen or perceived in an innumerable number of ways, that

¹⁰ "More inclusive meanings" here is equivalent to what Kohler calls "organized wholes," a statement which Kohler himself, however, would not unqualifiedly accept.

is, as innumerable meanings. To list a very few, it may be *seen (*a*) as cloth and dye (for instance, as by a chemist); it may be seen (*b*) as colour and design (as by an artist); it may be seen (*c*) as an American flag, that is, an emblem of the United States (as by a citizen); or it may be seen (*d*) as a symbol of victory in battle (as when Francis Key saw it, the occasion for "The Star-Spangled Banner"). It is our point that each of these perceptions is a different meaning or synthesis, some more, some less abstract, and that each is therefore somehow a separate identity, since cloth and dye have nothing to do directly with patriotism, and since it is not necessary to know that the flag is American in order to see it as colour and design, nor is it necessary to see the design as such in order to see it as a symbol, a fact that is proven by the inability of most citizens to tell whether the flag starts at the top with a white or a red stripe. In every case of perception, what is perceived is always a *meaning*, and not ever a thing to which meaning is afterwards added.

If it is objected that there is underlying each one of the separate meanings we have listed a sense datum without which none of these meanings could be discovered, we must again point out that there is a historical identity to each perception, an identity which is in turn a meaning so abstract and fictional that it has no existence apart from other and less abstract meanings. This highly abstract meaning is what we have previously termed *prime phases*, and in this chapter described as standard counters or historical identities. We must further point out that as you approach more and more abstract meanings, each meaning seems more intrinsic to the historical identity; and, conversely, as more inclusive meanings are perceived, although you perceive these as *in* the historical identity, they can be quite easily detached from it. Functional psychology would object to our description of perception by stating that we have confused many processes, such as sensation, perception, and conception; it would account for the immediate reaction of a patriot to an American flag, by stating

that the habitual association of the perception of the certain pattern with the emotion of patriotism had accustomed this man to the quick association with the pattern of this certain meaning, and that the perception and the certain meaning had become almost indistinguishable, although the two processes were separate and different. Obviously this interpretation is impossible, since it would require infinite learning of various associations of things. There are thousands of nouns used by averagely educated people, the meaning of which is immediately apprehended, such as *envy*, *hope*, *ambition*, etc. These meanings would require, if built up as functional psychology postulates, from perception of things to association of things, a superhuman complication of association of various aspects and occasions.¹¹ Accordingly the definitions of these nouns should be perfectly clear. Yet few people can put into intelligent language what *envy*, *hope*, etc., "mean" by themselves. When we turn to such words as *probability*, which is in universal use, a logician like Bertrand Russell finds it almost impossible to define, and J. M. Keynes calls it an *a priori* form of mentality! Is it credible that in the perception of the commonest meanings, such as a pack of cigarettes, all perceptual details mechanically combine on each occasion to form the meaning which a pack of cigarettes ordinarily holds? More than this, is it possible to see the details without deli-

¹¹ It is a common criticism of metaphysics that it deals only in words or language which it mistakes for things, and that therefore it is nothing but an exercise in dialectic. Thus science is preferred because it deals in things. Our argument has led us to the conclusion that science, not philosophy, has been betrayed by words in its metaphysical assumptions. Things are substantives, purely logical and featureless without qualities as expressed in adjectives. Thus adjectives come before nouns and pronouns. Substantives are but the hypostatizations of qualities expressed by adjectives or attitudes expressed by verbs. To *envy* is to take a certain attitude. It is not to put the entity *envy* on to a neutral relation. The noun, *envy*, is thus only a convenient way of referring to any relation in which one envies, and plainly is but a logical fiction. The mind, then, does not function with things except in so far as they symbolize meanings; and these meanings are never things but are valuations placed on them.

berately blinding yourself to the other and larger meanings? It is a common game to ask an habitual cigarette smoker who is wedded to a certain brand of cigarettes what is written on the outside of the pack other than the name of the cigarette, or what is the design of the letters or of the package itself. In the majority of cases the answer will be wrong, yet the smoker probably has seen thousands of packs of the same brand.¹²

If separate functions do not enter into perception, but only an integral process takes place, then what are these separate functions? Functions are merely logical abstractions, that is ideal conceptual aspects of the total mental event. Perception is the name for the totality of meanings which go to make a synthesis, whatever that synthesis, on any occasion. Sensation is the name given to a particular abstracted perception and is itself a perception. Conception is the name given to whatever meanings are included in a synthesis and may be abstracted one at a time, each of which is capable of being by itself a separate synthesis. Imagination is the name given to the general process of conception by image-making. Memory is a subdivision of imagination to which a certain value is given. Habit and impulse are terms for action and not strictly psychological concepts. Attention is the name given to the mere fact of selectivity, and will, the name given to the fact of exclusion of all else from a synthesis. Emotion is a name given to certain subdivisions of the total affective content which is always the positive element in every synthesis. There are strictly no functions, each predicated function is an ideal term for a particular abstracted aspect of the total event. The fact that functional psychology examines each aspect as though it were a separate brute fact accounts for its failure to give a recognizable picture of the mental life. We have no objection to the use of these abstractions as long as they are not taken too seriously in themselves, apart from the total consideration.

¹² There is a learning process, of course, but it is not the mechanical affair described by functional psychology or by behaviourism.

Indeed, it would be extremely difficult to analyse perception, without using these or similar abstractions.

The important consideration in psychology is the discovery of the direction of experience. This we found to be the search for significance, which takes the form of a concern with more and more inclusive meanings; and thus perception tends to be the synthesizing of the widest and most inclusive meanings. This tendency is in a sense automatic, in that identity attaches itself to the more inclusive in preference to the less, and it is only by deliberate effort, and then only *temporarily*, that the discrete can hold identity. It is therefore natural that an individual reacts to a total situation, therein selecting the most significant aspect, which is the largest meaning of that situation; and it is only by special attention that he can become aware of the details.

We have defined meaning as the representation by an identity of relations beyond it; and by consequence we can say that the greater number of relations which an identity represents is the measure of its significance. Truth is the ideal of the inclusion of all possible relations; value is the affirmative content of all possible meanings. Thus value and significance are synonymous terms. A synthesis, an identity, a perception, a meaning—these terms are equivalent. A perception is true in so far as it affirms, that is, what is positive in it always refers to something beyond; it is false in so far as it denies or suppresses, that is, by its decision, by its very identity, it tends to suppress all else in favour of itself. A percept must be not only a content but also a limitation. Therefore it is as an identity false, first, because it can acquire meaning only in terms of other meanings beyond itself, and, secondly, because its decision is only ideal, never absolute. It is always within a background, if only a background of time; when it becomes a historical identity, it is a pure fiction.

In experience the reaching after the more inclusive is always limited, often baffled, and continually importuned by proxi-

mate and urgent necessities of discrete being; this condition should not invalidate the evidence of the attempt to escape these limitations. We must distinguish between the importunate and the important: what is goadingly importunate one day is forgotten the next, and only what is important remains.

There are two ways in which meanings are dealt with: one for the constantly importunate, and one for the important. In the first, these meanings are reified, whereby consciousness has not continually to be occupied by them and they become historical identities; in the second, they are referred to the actualized past, whereby the self preserves its historical identity. The first would be insistent upon consciousness if not usually pushed out; the second are available to consciousness and are free to enter it. It is only by the retention of the more important meanings that the self can be a preservable fiction; and the self must refer these meanings to an actualized past in order for its own identity to be preserved. This condition is what is called memory, or, as we have said in Chapter I, the past is whatever meanings are selected out of a totality. A historical identity can only be preserved in comparison with other values. The experience of temporalization is just this continual preference for the retention of more inclusive meanings; the self tends to include a greater number of such meanings, though remaining somehow discrete. The judgment of value is time.

Perception is a compromise between the importunate and the important, or between historical identities and value. The perception of an object is the attempt to escape its immediacy and yet include in it as much meaning as possible. Learning, like memory, is the permanent association of meanings. That which is associated with the most valuable is the most easily acquired by learning.

It remains to summarize our position as to psychology. We have not been attempting to construct a new psychology, but merely to indicate how a proper psychology could be constructed. We conclude that functions are reducible to

abstractions from the total datum present to consciousness, and must be examined as abstractions in relation to the character of this total experience. This totality of psychological experience, which we found best described as perception, presents itself as a search for the greatest possible value in the face of the limitations imposed by the fiction of the historical identity of the self.¹³

In consideration of our conclusions above, let us return to the schools of psychology which we have examined, in order to determine what their contribution, properly interpreted, would be.

Functional or introspective psychology has been almost exclusively occupied with the analysis of perception into more abstracted perceptions. This school has shown how by deliberately impoverishing a perception through the removal of its more inclusive meanings, meanings seemingly different and more fundamental, but actually more abstract but of the same kind can be made to emerge

Behaviourism and Freudian psychology are examining the same aspects of mentality but from opposite ends. The conditioned reflex and the Freudian complex are almost the same concept. We pointed out, in the example of a perception (the American flag), that the most abstract meanings seem more intrinsic to the identity, and the more inclusive meanings seem less intrinsic. Behaviourism and Freudian psychology have occupied themselves with abnormal cases where the more inclusive meanings are not so easily detached from the identity, but remain a part of the historical identity and constitute obstacles to the proper functioning of reason.¹⁴

Gestalt psychology has made some progress toward the

¹³ The affective element in any perception is the content *qua* content of that perception. This we discuss under *Affection and Appetition*, p. 230.

¹⁴ A psychopathic individual is simply an instance of the reluctance to dissociate meanings once associated. The cure for both conditioned reflexes and Freudian complexes, where not self-induced, is the application of plain ordinary reason.

understanding of the fact that mentality is an integral process concerned with synthesizing meanings, although it falls far short of this ideal due to Kohler's retention of some part of functional psychology.

All these psychologies exhibit the same tendency as does physical science: namely, the fault of empiricism: incomplete rationalization of its subject-matter. In trying to dodge metaphysics, they have all had to start with data conceived as a set of disparate brute facts, a metaphysical assumption taken over from physical science. We have noted at length in our discussion of physics and psychology that this unwillingness to apply reason to basic assumptions always leads to conclusions which seem foreign to common experience. To arrive at any comprehensive judgment of what the total mental process is, therefore requires an epistemological reference, which in turn requires an ontological reference if it is to have any broad validity. Ontology, in turn, brings in, *willy nilly*, final causation. Thus no science, psychology or any other, can be of value or evaluated except through a thorough understanding of what it is attempting to do in relation to the whole of experience. Epistemology and psychology, however, can be distinguished; epistemology is the theory of knowledge on which psychology must be built. But just the opposite has been thought to obtain. the attempt has heretofore been made to derive epistemology from psychology; but this is an impossible proceeding. Without a general conception of the direction of a process, all subordinate processes are rendered unaccountable. In the building of an automobile, were the maker to have no idea that his product was to be used as a means of transportation, how could he decide what kind of construction would be the best or how to assemble the parts? Does the mere assemblage of parts decide the use of the automobile, or *vice versa*?

Equally impossible is the view that psychology can be in any way a criticism of logic. Logic is necessarily employed in any scientific investigation and no judgment of truth can

be made except by logical procedure. But logic is not the same thing as reason; it is a methodology whereby reasoning can be criticized. Therefore logic is no part of psychology, which is the examination of all experience in its temporal succession from the viewpoint of the subject. Necessarily, then, reason is included in the subject-matter of psychology, and its analysis is of the utmost importance if psychology is to give an adequate rendering of the mental processes. Modern psychologies have had remarkably little to say about reason because reason cannot be made to fit in neatly with the psychophysical category which has been set up.

Our definition of psychology makes imperative the examination of reason, for without such an investigation other aspects of mental life would be non-understandable.

vii. ACTION, AFFECTION, AND APPETITION

Before we proceed to an examination of reason, we must again insist that reason must not be considered as a distinctly separate element of mentality, but merely as a convenient abstraction from the total mental datum. Action, affection, appetite, and reason, are generally considered as separate elements. Modern psychology seems to take for granted that action is the final purpose of the reason and the appetites; but this leaves action unexplained. Action *qua* action is an ideal term; action in experience is always purposive, that is, rational; moreover, it is always appetitive. Similarly psychology treats reason and affection as opposed; whereas reason and affection are finally inextricable, as we shall show. No reason is possible without affects and no affects without reason. Thus, since these are only ideal terms, it is as ideal terms that the reader must continue to construe them, though we must perforce in logical analysis employ them as though they were distinct functions.

ACTION.—Action *qua* action is unknowable. What you know as action is cognitive, that is to say, it is part of the rational explanation of experience (what we have termed the legend

of common experience). If action is anything else, that something is for ever removed from knowledge. Therefore to employ action as an explanation of reason is to beg the question. When our man "reached" for the red apple, this was action; but "reached" is a teleological, that is a cognitive, term. You cannot explain reason in terms of action, where action is known only in terms of reason.

Action is the attempt to realize the object of appetition. An appetition, in turn, is that phase of an affect which yearns toward an object. Translated into objective terms, this means that an organism moves or strains toward an object. Thus, again, action is an illicit explanation of affection or appetition, from the psychological point of view.¹⁵ Action belongs to the legend of common experience, and as such is not the datum of psychology. This statement must not be misinterpreted to mean that cognition accounts for the universe, but only that experience can be known or thought of only in cognitive terms. Cognition is not all; but all that is knowable is cognitive. Yet this cognition itself would be indescribable without the postulation of something else: all other meanings.

AFFECTION AND APPETITION.—Affection is the content *qua* content of meaning. Psychology has made hash out of the examination of this phase of the process of perception. It has subdivided the affection into terms which are supposed to represent disparate functions: sensation, emotion, feeling, urge, and instinct. These are all slightly different views of the affective element involved in the total psychological datum. Strictly, an affect is undefinable since a content is an ideal part of an object; when that content is delimited (as of course it always is) the delimitation of it renders the total percept cognitive. It might be figuratively said, then, that the affect

¹⁵ Habit is thus also an illicit concept in psychology. If the word, habit, means an explanation in terms of neural patterns of why iteration of certain actions should take place, the concept is physiological. Otherwise habit is simply a way of saying that an iteration takes place, and is no explanation at all.

is the content and the cognition the form of an object; though, again, this must not be taken too seriously, since form without content is meaningless and *vice versa*. Affects are ineffable. The sensation of red is an affect; the emotion of fear is an affect; the feeling of cold is an affect; the urge of hunger is an affect viewed from the objective end (in this instance a tendency toward food); the instinct of flight is the translation of an affect altogether into the sphere of action. Whatever terms may be used in psychology to denote affects, it must be clear that consciousness is impossible without them, since they are the positive "stuff" the mind knows, the most important aspect of consciousness itself.

The fallacy of absolutely subdividing affects leads to the conclusion that they are different sorts of elements, whereas they are simply different levels of value. Affects are values though not immediately self-evaluating. As values, affects cover all degrees between the most discrete and the most significant, which terms appear here as acuity and suffusion. A toothache, for instance, is an acute affect which pre-emptly attention and seems important as long as it lasts; but when it disappears it can hardly be remembered. St. Francis' love for the world is an example of how a suffused affect which does not pre-empt attention can remain undissipated. The more acute seems definitely in the present, the suffused is elusive of the present and belongs more to the past, that is, it can only be appreciated as a part of the past. "I have a passionate desire to take a bite out of the now," wrote Sherwood Anderson. This elusiveness of significance in its temporal aspect forms the inevitable tragedy of experience. The discrete, the acute, the immediate, the present, are by their nature of little value, whereas the significant, the suffused, the past, are by their nature valuable but intangible and remote. The impossibility of grasping the infinitely valuable is thus apparent, that "something which gives meaning to all that passes and yet eludes apprehension."¹⁶

We have just said that an affect is the content *qua* content

¹⁶ Whitehead, *Science and The Modern World*.

of meaning. This is an abstraction taken from the point of view of the subject. An appetite connotes something more: a preference for, a selection of, and an affinity to, meanings. If a thirsty man visualizes a glass of beer, the craving as feeling is an affect; this craving plus the tension toward the beer is the appetite. All affects are appetitive; and of course all appetitions affective. Indeed, appetite is merely the term for the completion of the subject-object relation in its affective aspect. Thus the infinitely valuable and the desire for the infinitely valuable cannot be separated; for the value is *ipso facto* what determines the selection, and the fact of selectivity is the appetite.

Man is continually grasping after this impossible goal of the infinitely valuable, impossible because he is himself limited by the fiction of discrete being. Thus he understands significance only in finite representations, which reflect the infinite. Appetitions toward these finite goals, some more remote, some nearer, are substitutions for the all-embracing appetite toward infinity. These finite appetitions are what are ordinarily called desires, appetites, urges, etc. That the satisfaction or attainment of any desire is necessarily disappointing is required by the very substitutional nature of all finite goals of desire; for it is only the goal of the infinite which is truly desired. "It is the nature of the finite to seek for that which nothing finite can satisfy."¹⁷ The temporal run of experience, the present, is the continual electing and rejecting of meanings in the light of the appetite toward infinity. As we have shown, the attainment of this appetite is bound to be baffled, since the very attention required for the selection of one meaning rather than another makes that meaning finite and hence fictional. The evaluating of these meanings is thus referred to the past where the devastating acuity of the present is lessened and the more important meanings assume their priority though still retaining a symbolic finite form. The more important meanings saved (by the past) are evaluated

¹⁷ Bradley, *Appearance and Reality*

by the fact that the more valuable preserve their fictional identity, though identity refuses to continue the fiction of the less valuable.

Thus by symbols the most inclusive values are bound together and represented. This is the principle of art, wherein the artist assumes the rôle of time, immediately selecting the symbols for the more inclusive, to bring those meanings as much as possible into the present in an ideal synthesis, and to attempt to save them from dissolution and to make them sensible. But art, like the past, is also a compromise since it, too, can express value only in representational or symbolic form, which form necessarily refers beyond and never to the symbol itself. We must repeat that the content of these symbolic meanings *qua* content is affective. The gathering together of meanings into a symbol is effected by the immediate relating of affects (connotations), it is not accomplished by the rational association of denotations.¹⁸ When the colour, red, is perceived in a painting, it is perceived immediately in its relations with other colours in the painting and with other things and meanings beyond, and not as a formulated idea of red. Thus to appreciate a painting it is not necessary to go through the various processes involved in its creation or attend to its separate elements. The association of meanings through affective connotations rather than through logical denotations is the essence of artistic creation. It was this idea George Moore had in mind when he said somewhere that in art all, saving an emotional understanding, is worthless.

In what way does affection hinder the operation of reason?

¹⁸ The process of immediately relating meanings into a symbol is sometimes called induction, inspiration, or artistic creation. These terms imply that this process is not rational. It is true that this process differs from the rational where the rational is understood as merely the relating of identities by classification or cause and effect. This, however, is not the whole of the rational process, which includes the immediate synthesizing of meanings, called induction or insight. But since induction is part of reasoning, we see nothing to be gained by such an arbitrary division or by setting up another entity.

Reason and affection are not opposed, but the common notion that what is emotional is not rational has some basis. We have also said that affects deal directly in values though always tied down and limited to finite objects, and that therefore affection can be self-evaluating only through the category of time. But reason deals not in affects as affects and therefore not in value but in affects as limitations, that is, in identities, which we have shown to have *as identities* only an ideal existence (inasmuch as all actual identities are *as if*). Thus reason can relate identities without the category of time. Affection interferes with or inhibits reason when it insists on the temporalization of rational concepts. The truth or falsity of a statement is ahistorical; for example, the fact that one and one are two is indifferent to date, whether uttered A.D. 1932 or 1932 B.C. But affection tends to colour any such judgment with many other meanings not germane to the particular abstraction under consideration. The whole affective connotation works against abstraction which sets value at naught. If you say, "This statement was made by a Bolshevik and therefore cannot be true," then you are introducing the category of time into a rational statement by allowing the total affective connotation of "Bolshevik" to enter. On the other hand, reason slights or overlooks affection when it holds as actual its ideal definitions. You cannot even contemplate a triangle without being aware of affective elements, such as the white and black of the drawn outline, yet it is an ideal triangle with which reason works. The seeming opposition of reason to affection does not prove that we are dealing with two radical elements, but with two aspects of the total mental fact. For affects owe their *differentiation* in value to the fact that they are the content of *identities*, and therefore indirectly to reason, which makes them identities. And equally reason would have no identities with which to deal, were they devoid of content or affects.

VIII. REASON

The Validity of Reason.—No understanding of psychology is possible without an understanding of the part reason plays in mentality. Modern psychology has practically neglected reason on the assumption that primary psychological findings would determine not only how reason functions, but its validity. But can any scientific fact constitute an argument as to the validity of reason? Psychology and all other sciences perforce accept practical reason because all mental activity depends upon it, yet science distrusts theoretical reason. This is the result of the one-sided empiricism which has conditioned all science since the Renaissance. To this empiricism, facts are brute and irrational; yet reason is employed in their correlation and assemblage. Reasoning which starts from "brute facts" is called practical reason. The rationalization of brute facts themselves is called theoretical reason. But surely if it is permissible to employ reason to work from brute facts, it is also permissible to employ reason to analyse brute facts. And if reason is misleading in its theoretical aspect, what assurance is there that it is efficacious in its practical aspect? It is well to remember here that the division of reason into practical reason and theoretical reason is *ad hoc*. Our argument has shown that what science accepts as brute facts are rational concepts which it has refused to consider as such and so refused to analyse. Science has thus been sometimes led to wonder along with Hume how reason, as for example in mathematics, could be applicable to brute facts.

All questions as to the validity of reason are by their nature futile, for if reason be ineffectual how could such ineffectuality be proved except through reason? The proof itself would have no standing. Although the efficacy and validity of reason must finally be beyond proof, since such an efficacy could only be proved by reason, still the assumption of the validity and efficacy of reason is at least a basic assumption, and must be made if science, and indeed all thought and sanity, are not to fail.

Two general attacks have been launched on reason: first, by Bergson and the philosophers of "pure experience," that reason does not take into consideration the element of time or the flux of experience, but merely carves over the static dead world and thus falsifies the "dynamic" quality; secondly, by evolutionists and popular exponents of psychologism, that reason is the practical tool of the instincts, and that its main function is to "rationalize" blind appetites.

Let us consider the first attack. In neglecting the element of time, reason is omitting the consideration of historical identities, which is to say it considers the continuance of an identity as identity of no validity, but it treats only the affectual aspects of historical identities as valid. A white sheet of paper is an identity in that it has certain qualities, such as extension, rigidity, whiteness, etc. Without these qualities it has no proper identity save the fiction of historical identity; but these qualities are what preserve the fiction of historical identity which is preserved by naught else. Thus the element of time is purely fictional and is misleading in so far as the truth of identity is concerned, "for what has lasted white ever so long, is no whiter than what lasts but for a day."¹⁹ One red rose is like another red rose in size, colour, and shape, and unlike another in odour and weight, we will assume; but the sameness or dissimilarity of these qualities is indifferent to the fact that they seem attached to two separate and distinct historical identities. Moreover, if changes occur in size, colour, shape, odour, or weight in one of the roses in the course of time, these changes can be specified only in terms of these qualities and not in terms of time. Thus the atemporal nature of reason is an argument for its validity and not the opposite. For reason deals in the abstracted qualities from an identity, which make it all that it is, and thus leaves out its fictional aspect, even though while so doing it thereby sets up *pro tem.* an identity. We may conclude that the ahistoric nature of reasoning is the true aspect of the process

¹⁹ *The Nicomachean Ethics of Aristotle*, D. P. Chase trans

Let us now consider the second attack which would make reason dependent on the instincts. This objection first of all assumes that instincts and urges are not already partly rationalized. We have demonstrated that all instincts or urges are affects plus a rational purpose, which of course presupposes reason. Thus, if reason be thrown out, it would be impossible to define an impulse. It is obviously true that spurious reasons are often formulated to account for actions; but it is equally true that if these reasons can be shown to be illogical, they are bound to be discarded and other reasons substituted in their place. Now the very judgment that they are "illogical" is a rational judgment and presupposes a reliance upon reason. Thus any judgment against the validity of reason ends by accepting what it would reject; even in so-called ultimate scepticism one ends by doubting the ability to doubt, which is itself an affirmation. Thus faith in reason is basic and all reason is necessarily affirmative. "For in any case thinking means the acceptance of a certain standard, and that standard, in any case, is an assumption as to the character of reality."²⁰

How Reason Functions—Although the efficacy of reason can never be impugned, and is thus in a sense basic, reason yet demands for its efficacy a faith which is ultimately and irreducibly undemonstrable, and therefore irrational. Thus reason must be founded on something other than reason. It requires what we must paradoxically call irrational ideas. The unknowable, the inconceivable, the infinite, are such irrational ideas without which reason itself would be impossible, for even if these ideas are irrational, reason certainly employs them. For example, in mathematics there must always be a finite number greater than any given finite number; but this finite number which is greater is never the greatest, and so the progression is inexhaustible. Thus the finite as ultimate, as well as the infinite, is inconceivable, but in different ways. The very concept, finite, has no definition except in terms of something beyond, and thus as an ultimate constitutes a con-

²⁰ Bradley, *Appearance and Reality*.

tradition in terms; whereas the infinite is simply an expression of the fact that reason can function only in finite terms and so assumes the existence of something beyond. "For to deny the existence of any irrational elements is to make rationality itself a brute, contingent, alogical fact."²¹ Likewise the inconceivable and the unknowable are required by the conceivable and the knowable.²² Strictly speaking, then, there are no "irrational ideas," but only ideas which are beyond rationalization although useful to reason. Mathematics, the purest example of reason, would be of small worth without the concept of zero and infinity, both of which are irrationals. These concepts are, then, merely the limits which reason approximates.

Reason approaches but never reaches the infinite or the integration of all that is, for it demands discontinuity in order to operate. It functions through concepts; and a concept is a decided identity, an abstraction. Such abstractions are ideal fictions, atemporal and aspatial. Each concept is a thing-in-itself which yet requires reference to other things or concepts in order to have a meaning "Leg" is a thing-in-itself, in a sense, yet its meaning depends upon other things. What reason does, therefore, is to abstract certain affects from their temporal and spatial associations, and thus reason deals with only one meaning at a time, thereby affirming one aspect of the truth though necessarily making of that one aspect another identity, which, torn from its context, loses value. Thus reason, while it affirms, denies, and while it asserts the

²¹ Cohen, *Reason and Nature*

²² This does not mean that reason can ever rest on any finite grounds by claiming that here is the limit of rationality, but it is the task of reason to continually push back the limits of the unknown, although it can never exhaust the potentiality for knowledge. So many things deemed unknowable have become known, so many things deemed inconceivable have been conceived of, that it is folly ever to try to draw a hard and fast line and to state that here is the limit of cognition. The acceptance of hard stubborn facts as finally irrational is the deliberate invocation of mystery, and this is playing traitor to reason. Thus science although rational in its procedure is grounded on an irrationalism, and herein lies its essential weakness.

truth, sets up a limitation to that truth or a falsification. The falsification is indispensable to its assertion of the truth; and, this is what we mean by saying that every rational concept is fictional: it is true in what it asserts, false in what it denies. Thus no truth can be final, because every truth necessarily represents a limitation and therefore a falsification.

The reasoning process is a continual process of analysis and synthesis. Each concept is an abstraction from a synthesis, and yet is itself in turn a new synthesis. Reason continually destroys and creates concepts; and the most intelligent persons are those who are able to dissociate old concepts which have outlived their usefulness as such and to devise fresh ones. For the more used a concept the more reified it becomes, until it seems, like a historical identity, almost irrefrangible. Just how much difficulty such obstinate concepts cause it is hard to overestimate; this is the famous power that words and ideas wield, over which so much blood has been spilled. The word "liberty" is an example of how a concept can become hard and fast, and, like a historical identity, acquire values; yet the concept of liberty, which has been responsible for so much strife and durance vile, has stood in the way of the attainment of liberty because as a concept it was not dissociated or analysed. Taken too seriously, a concept becomes a counter and often has the opposite effect from that intended. It becomes an obstacle to reason instead of an aid. No concept, however inclusive, can be aught but a stepping-stone and a means. On the other hand, all advancement in thought has come about by the creation of new concepts, since each concept gathers together a new set of meanings into an integral whole or synthesis. Thus concepts act as a kind of convenient shorthand without which no comprehension would be possible. The potentialities for new combinations or syntheses are of course innumerable.²³

²³ The fact that a case may be made out for or against almost any argument has led to the prevalent opinion that anything is true or false according to your prejudice. But we would recall here our

Synthesis and analysis are the integral processes of reason. Induction and deduction are other terms for these two processes. An induction is the immediate association of a number of hitherto unrelated meanings into one synthesis. A deduction is the analytic development of that synthesis into its necessary meaningful implications. Thus the only inductions which resist analysis are truisms, all others can be made to reveal their contingent nature. Even such a generalization as "All men are mortal" is incapable of proof, for even though all past generations of men have proven mortal, there may be some men, or only one man, alive to-day who will not die. Or, at least, it is impossible to prove that all men alive to-day will die. If we then amend the proposition in such a way that it is placed beyond dispute, such as to say that "All dead men have proved mortal," the proposition may be read "All dead men are dead," which is pure tautology. And thus the only induction or synthesis which is true beyond dispute must be a truism. But what is a truism except the statement about an identity that it is an identity? Certainly it tells nothing else about it. All concepts, then, are contingent; and this holds whether they be called syntheses, inductions, theories, or facts.

The direction of reason, then, is the attempt to form a complete synthesis which will include all meanings into one total and complete truth. That this direction points to an impossible goal is understandable in the light of the fact that reason lays down its own limits in that it sets up concepts which are themselves delimiting and contingent. Reason is always destined to fall short of its intention.

The irreducible limits of reason are ideas which cannot be rationalized but which are employed by reason. It is the acceptance of finite ideas which yet demand the postulation of something beyond the finite which is called faith. We

argument above that every assertion must be partly true and partly false, and also that some assertions may be truer and less false than others without thereby invalidating whatever truth there may be in the others

cannot admit that in this sense faith is opposed to reason; but, on the contrary, each presupposes the other. A faith which can no longer be rationally defended is no longer a faith; and the process of reason itself demands the utmost faith in its affirmation. Every rational statement is a declaration of some faith; likewise every statement is an affirmation, even those of ultimate scepticism, as philosophers have proven time and again. Thus to deny faith is to deny reason—an impossibility.

What is meant, then, by the common opposition of faith to reason? When a faith is called irrational, it is because a certain rational belief is no longer tenable in the face of new evidence; and the fact that the subscriber to that belief stubbornly refuses to discard it does not make that belief emotional but does make it illogical (to all but him who has steadily refused to examine all the evidence). Why, then, does such a believer refuse to examine all the evidence involving his belief? This is because values have clustered around the concept, introducing temporalizations which inhibit the true ahistoric functioning of reason. A man may continue to believe in the principle of protective tariff, even when presented with perfectly valid arguments against that principle; and he may bravely and illogically (although his logic is valid to him) defend his belief. In such a case the principle of protective tariff has become a quasi-historical identity because of affective values, such as his respect for his father (who believed in the same principle), his concern for the success of his business (which he believed dependent upon the continuance of protection). These affects of course are connected up with various other affects, such as his love for his children, his reputation in the community, etc. It does not matter whether he is justified in voting for the tariff. The point we wish most of all to stress is that this man may not be at all disingenuous, although no doubt he seems so. Furthermore, from the limited evidence which his affection allows him, his reasoning is logical. A belief is no less a rational affair *in esse* because

affection hinders the free operation of reason in examining it. The belief in organic evolution is no less a matter of faith than the belief in the biblical version of the creation; both are defended rationally for reasons which seem good and true to the holders of the belief. In the case of the fundamentalists, we undoubtedly have the affective element entering to disallow or disqualify part of the evidence; in the case of the evolutionists, we have less of the affective element. But this state of affairs has no bearing on the fact that each belief is rationally founded on another belief, and so to a point beyond which it is impossible to rationalize. For a reason which is doubted even in the slightest degree ceases to be a reason.

Reason as an abstract consideration has been so much discussed, so much explained, that the notion that reason is a function requiring nothing else for its operation will not be downed. We have tried to show that there is no content to a concept beyond its affects, and that reason does not select among affects those which are selected. It arranges those affects selected into a synthesis, which in turn it is able to arrange or relate with other similarly constructed syntheses. It does so by abstracting the positive elements in a synthesis and by relating them with similarly positive elements.²⁴ Thus, although reason does not evaluate, it deals in evaluations as though these were counters lacking in value. Figuratively, reason might be called a guide, who, though himself indifferent to destinations, will lead you wherever you want to go; it is furthermore the only guide you can find. For the direction

²⁴ This process is classification. The only other process of rational relation is that of cause and effect. Cause and effect is another turn of classification, where it is convenient to consider two entities as not parts of a larger, but as complete in themselves. To postulate one thing as the cause of another is to make a judgment of value, i.e. to say that one relatum, called the cause, is more important in a situation than any other relatum, which in this connection would be only incidentally related. Thus by the judgment of value, time enters into cause and effect, cause and effect is merely a usage of common experience. In science, cause and effect is ideal and trustic. Cf. p. 43.

or aim of value toward the more inclusive and significant marks an irregular course and one that can only be plotted by reason.

In no way may reason be made use of as a final principle for conduct, although the reliance on it is conditionally necessary. Reason is a map; and a map cannot tell you what destination to take; it can only show you how to proceed toward your destination once you have chosen it, and on your journey reassure you from time to time that you are on the right road. How often have you heard it said of a policy or of a plan that "it sounds reasonable but does not agree with human nature"? Such ideals as socialism or strict communism are often spoken of in these words. Reasonably, there seems to be no "reason" why the proposed policy or plan should not work out; yet actually it does not. Such a policy or plan momentarily seems like a broad straight road toward an authentic objective; but evidently it is not the authentic objective, simply an over-rationalized one. To travel this road is never to arrive at the appointed goal, but only to traverse by-paths and end in cul-de-sacs. For the road that value requires is never clearly seen in its whole stretch, but is plotted with the aid of reason, step by step. The journey is hesitating, bewildered, and uncertain, and the goal is unattainable, yet it leads inexorably onward.

The man who strives to base his behaviour on what he considers pure reason, conducts himself in a manner which from another's rational viewpoint must seem utterly fantastic, because his reason is always at a loss for something on which to take hold; and so he turns from one shallow faith to another. Similarly constituted is that other rationalist, the doctrinaire, who, accepting a partial truth as final, proceeds logically and relentlessly to force as much of the world as he can into his own narrow mould. In both these cases we have examples of incomplete rationalization. The free use of reason demands that it shall never be an end in itself, that is, that no concept shall ever be held inviolate against an examination

by reason. To hold a concept so, is to set up the finite as sacrosanct: a tyrannical obscurantism which inevitably defeats itself. For ideals must be unattainable if they are to be kept as ideals; once attained, the former ideals become the flattest and the most despised of ideas. This is William James's bitch-goddess, success.

FALLACIES OF REASON.—We shall now proceed to an analysis of the most common hindrances to the efficacy of reason. These we have divided into two main fallacies: (1) those fallacies which arise from taking negative abstractions too seriously; and (2) those fallacies which arise from not taking positive abstractions seriously enough. It will be remembered that we have said that reason is false in what it ultimately denies and true in what it ultimately affirms. An analysis of the fallacies of reason will offer further proof of this fact.

(1) *Fallacy of Complete Abstraction*—Every concept is for reason an identity: a thing in itself which is itself and nothing else. Thus a concept is a content delimited by all but itself. It is this delimitation of an identity which we have termed its false aspect, since it is only quasi delimited and demonstrably not unconnected with all else. This is true, whether the identity be a particular or a universal. All things may be said to be either red or non-red. But the postulation of non-redness is not conceivable in its complete denial of red, for inevitably the quality of redness is imputed, in an unintentional way, to all which is said to be non-red, or else some other positive colour or quality may be introduced, which introduction was not logically necessary by the original postulation of non-redness. The mind simply cannot grasp any negative abstraction and inevitably and illogically imputes a positive quality to it. Before us is a pencil. In the perception of this object, pencil, the logical judgment is as follows. Here is a pencil, surrounded by all else which is non-pencil. This is a logical judgment of course; but actually we do not perceive non-pencil but a green table, sheets of paper, chairs, and many things besides. Logically they are all non-pencil;

but surely these other objects are not perceived as non-pencilish, and there is nothing of non-pencil about them. Perception is free of negation; all affects are affirmative. Thus all identities as to their decision are fictitious, quasi, and logical. This proves the impossibility of complete decision; negation is only ideal. Non-being, which is the logical postulate of that which delimits an identity, cannot be said to be. Logic, therefore, proves its own ideal character, for, though it requires the quasi division into what is *A* and non-*A*, it thereby asserts that what is not cannot be.

The most common form taken by the fallacy of complete abstraction is what we term vicious abstractionism, or the taking of a partial aspect for the whole.²⁵ This fallacy comes about by making any concept a final thing in itself, as decisively separated from all else. It is the consideration of an abstraction as a full concretion. This fallacy is extremely common, and arises from an intellectual conservatism, a laziness and inelasticity of the intellect, and also from a certain amount of timidity in the face of new decisions and a reverence for old decisions. It constitutes the most pregnant source of confusion there is, and to some extent it offers an almost irresistible temptation to avoid reasoning. To take a topical illustration, it is often argued to-day that America, a capitalistic country, is suffering from unemployment, whereas Russia, a communistic country, has no unemployment problem. Ergo, communism is a good thing. The fallacy in this reasoning lies in taking at least two abstractions too seriously: namely, capitalism and communism, each of which is here hypostatized into a final thing in itself, completely independent of all else. First of all, the concept, capitalism, is but one aspect of American social organization; and the same may be said about communism, which is but one aspect of Russian social organization. Thus to determine to what extent and in what manner unemployment relates to these two abstractions, it is

²⁵ In Chapter I we touched on this fallacy, where we termed the taking of an abstraction too seriously the error of confusing identities

necessary to consider as closely as possible just how the whole concrete situation in its involvement is comparable to the other whole concrete situation, situations in which these abstractions are but parts. But to proceed on the assumption that capitalism as one abstraction from the total situation, or communism as likewise one abstraction, covers the entire concrete situation, is to take the part for the whole, to oversimplify to a point where reason is led astray. All this confusion comes of over-hypostatization, which in turn overlooks the quasi or ideal character of every concept. To illustrate how this same fallacy operates in everyday life, where perhaps it does no great harm, let us take, for example, a match. A match is a concept of function, namely, an apparatus with which to strike fire. Now, if you sharpen one end of a match and use it as a toothpick, you continue to think of it as a match, although, strictly, it is now a toothpick. In this trivial example of the sloppiness of reasoning habits is seen how easy it is to take one aspect (in this example, the function) as representative of the whole

A corollary fallacy to that of complete abstractionism is that of false opposites, where the logical opposite of a term seems to be fully satisfied by another positive term. The logical opposite of pleasure, for instance, is non-pleasure. But the positive term which seems to be its opposite is pain. But non-pleasure is a more inclusive term than pain, inasmuch as it may contain pain as well as apathy or boredom. Moreover, as we have said, pain is sometimes pleasurable and *vice versa*. This fallacy comes about in the manner we have just shown above, whereby the mind, being unable to grasp the negative, seizes one aspect of the positive which seems excluded, and then takes this single excluded positive aspect for the whole logical category of non-existence.

The general conclusion of this whole argument concerning the fallacy of complete abstraction may be summed up in the warning that a concept as an identity cut off finally from all else must not be taken too seriously.

(2) *Fallacy of Historicism.*—We now come to the fallacies of reason which consist in neglecting or confusing the truth of a concept. By the truth of a concept we mean not its delimitation but its content, which affirms. These concepts, though they never represent the whole concrete truth, do represent the truth about the abstracted positive aspects; and a totality of abstracted positive aspects from an identity would represent the whole truth of that identity. Apart from the totality of positive aspects, the identity itself has no meaning; and reason rightly overlooks it. However, to take the identity as an identity instead of as such a totality of abstracted positive aspects into consideration, is to commit the fallacy of historicism. It is to falsely assume that an historical identity is something more than a logical fiction. A very simple example of historicism is the following. *A* and *B* each put a dime on the table. Someone engages them in conversation, following which they pick up their dimes again. Should *A* object that he did not get his original dime but *B*'s dime, the question would then arise, whether his objection had any meaning. If both dimes were similar in all positive qualities, the question could have no reasonable meaning; and to go on the supposition that it could, is to commit the fallacy of historicism. If any difference of any sort between the two dimes was involved, that difference would be specified by some positive quality, such as the date of issue, the debasement of the coin through excessive wear, etc., and could have no reference in any rational sense to its identity as identity, that is, to its *historical identity*.

Under the head of fallacies of historicism, we include the argument by time, the argument by space, and the argument by origins. We are all familiar with the argument by time. The explanation of the present state of a thing, or condition, by the concept of "evolution," or the cyclical theory of history set forth by mystically stating that a cycle must by itself complete itself, such as Spengler's, exemplifies the fallacy of the argument by time. Again, "old age" is frequently given

as an explanation of physical disability. These "explanations" are simply more or less elaborate restatements of the initial problems; for the reasons advanced in each case must refer to positive elements, and not merely to time. Should an organism evolve, the explanation of this must lie in the nature of the organism itself or in its environment, and it is the essence of the problem to discover, if possible, what these factors are; but mystically to state that time can enter as a causal element is to evade reason. Similarly, an historical cycle is started or accelerated or completed by positive factors; this is what makes a cycle, and to introduce time is only to introduce an obscurantism. Again, "old age" is a term for certain somatic changes. Irrespective of the number of years that a man has lived, be he eighty or ninety, if these somatic changes have not occurred, "old age" in this sense cannot be attributed to him. And thus again time explains nothing, but merely states a tautology, obscuring and anti-rational in the extreme.

The argument by space is similar to the argument by time, in that it considers the position of an identity as something in itself and worthy of attention as a factor in the truth about the identity. But just as in the case of time the history of an identity is merely a substitute for whatever positive qualities an identity may possess, so in the case of space the position is nothing in itself, but merely a reference to other identities. We demonstrated in Chapter III how the concept of position is not a proper quality of an object, and, consequently, that such a concept can only be considered as relative to an identity as contained in a system. Thus when reason abstracts affirmative aspects of an identity, it rightly leaves out all considerations of spatial position. When you hear the statement that "the European mind can never understand the East because what is true for a European is not necessarily true for a Hindu," you are listening to an example of the argument by space. "He will never understand American customs because he's a foreigner"; "You can take the boy out of the country, but you can never take the country out of the boy"; these are also

examples of the argument by space. Such statements may or may not be true, but in so far as they are true or in so far as they are false their truth or falsity is completely indifferent to the question of spatial position. In the first example, whatever inhibits the West or the East from understanding each other has nothing to do with the space separating them. If it be objected that the distance separating the two peoples is what prevents their mutual understanding, then we must answer that this is beside the point, being but an obstacle to intercourse, but certainly not a judgment of the truth of their separate beliefs. A Frenchman and a German may not understand each other's language, yet their logical judgments on any subject are right or wrong independent of this fact. In the second example, the difficulty with which a foreigner comprehends American customs has nothing whatever to do logically with space. A man brought up in complete isolation in the United States would have just as much difficulty. Similarly, in the third example, the country boy has trouble assuming city life, regardless of whether his rural home was a hundred or a thousand miles from the city.

Reason has rightly nothing to do with either time or space. In physics and mathematics, two of the great modern triumphs of highly abstractive reason, this fact is taken for granted. One and one equal two, or negative and positive charges of electricity attract each other, indifferently as to whether the mathematical or physical operation be performed in Baluchistan or Alberta, in the year 5000 B.C. or a million years hence.

The argument by origins is closely related to the arguments by time and space, in that its fallaciousness again arises from considering an historical identity as having in itself rational value. The statement that "he is a lunatic and therefore what he says cannot be true" is an example of this argument. "He is an extraordinarily successful banker; therefore his opinion on certain financial matters must be true," is another example. Practically one is often forced to accept statements of this kind wherein it is tacitly assumed that in all probability what

occurs in the future will resemble what has occurred in the past, and that events in general run true to form. There is no logic to this kind of argument, for each statement by a lunatic or a sage rests on its own bottom, and is either true or false regardless of the past record of the person making the statement. It will be objected that the world must make judgments by origin, and that our criticism of such judgments is pedantic. We can reply that if the world went altogether on such judgments, we should indeed all be lost and reason would perish.

Surely it is impossible for any mortal man to altogether avoid these fallacies, but this fact does not detract from the desirability of avoiding them as much as possible. All good reasoning follows the example of the rational methodology of science which pays no heed whatever to historical identities. This methodology consists in taking positive abstractions seriously without reference to their setting in time and space. The complete refusal to consider abstractions or qualities as free of the historical identity results in insanity.

To conclude our discussion of the fallacies of reason, we see that certain philosophical inferences are demanded. Reason, which cannot operate without discontinuities, still denies discontinuities and thus affirms basic unity, inasmuch as the boundaries of concepts or identities are ideal and logical but finally undemonstrable; no concept is final but always demands something beyond, which something must be positive and not mere negation. Furthermore, reason through its operation by means of abstractions is entirely unconcerned with time and space as entities, although time and space are the categories by which identities are defined. Thus the true operation of reason, by its cavalier treatment of historical identities, serves as a further proof that the world is a composite of affectual and affirmative meanings basically all reconcilable as one. Because the understanding of this unity is partial, time and space are logically demanded, although they are in themselves, as reason proves, utter fictions.

IX. SOME CONCLUSIONS

We shall now give as succinctly as possible our understanding of what the total psychological process is, as to its function and direction; we shall also sum up our understanding of the place of affection and reason in the total mental process.

Psychology is the study of the data of consciousness from the point of view of the subject. The subject or mind is that which knows; it is therefore unknowable. We have termed it a fictitious break in basic unity, having, like a point, none but an ideal existence.

From the psychological point of view, what the mind knows are affects which appear as attached to discrete identities. Affects are the content of concepts, affects are values, that is, the positive elements of knowledge. Concepts are these values treated as counters for the purpose of relating them. This relating is the function of reason.

The mental process is a continual search for greatest value or significance, which search, though baffled by what is importunate, continues, by the reduction of the constantly importunate, to reifications (or substances). The search takes the form of creating and destroying concepts in order to arrive at a greater and greater inclusion of truth and approximation of significance. This goal is unattainable because a concept is by its limitations always fictional. The assembling of these fictions into as large a synthesis as possible is the forming of a legend. Reason deals in truth, which is the intellectual aspect of value, but does not deal directly in value; value is dealt with by the category of time and is affective. Reason affirms continuity and eternity, although in order to do so it must cut cross sections through continuity. Affection affirms the essential integrity, the infinite relatedness of all disparate values, by assigning revaluations to these disparate values as partial aspects of significance. In so doing, affection sets up time-partitions, whereby what is valuable is held on to, and what is not valuable let go; the retention of the more valuable

is called memory; the partitioning of the more valuable away from the tension of the present is called the past. Reason and affection are two parts of an indissoluble process, in which, it may be said, affection decides the direction and reason throws the light across the path. This process we have termed perception. The mere fact of the selection of some meanings, together with the necessary repression of others, is in itself attention and will. All so-called psychological functions enter undivided into the mental process.

The proper employment of reason clearly reveals that it cannot be an end in itself, nor can it be slurred or slighted. Thus its validity is in a sense final. Because reason together with affection indissolubly make up the mental process, to deny reason its efficacy is to deny mentality and therefore consciousness. But this is an impossibility, therefore the validity of reason stands supreme

This is not to say that reason cannot err. For by its tortuous progress toward truth it is beset with its own too stubborn concepts, which, having outlived their usefulness, now stand in the way by becoming, seemingly, things in themselves (historical identities). So there is a necessity for dissolving concepts, as well as for making new ones; and these new concepts in turn are destined to be dissolved. The process can never end, since error is demonstrable, but truth can never be finally ascertained

When the foregoing is thoroughly understood, a new attitude will be engendered, whereby reason will be assigned its place as neither ultimate nor traducible. Concepts will never be taken so seriously that they cannot be dissolved. It will be understood that every statement is partly true, but never wholly true. Conflicting ideas will therefore be seen to be both true in part, and yet one may be allowed to be more true than the other, without thereby invalidating the lesser truth. This will resolve one dilemma that troubles the modern world: truth seems to be relative and yet to make it so leads to a hopeless subjectivism. For truth is ultimate and final, although

all truths are relative; just as all values are relative to significance, of which truth is but the intellectual aspect. It is the acceptance of life as above all a search for significance, guided by the right use of reason, that makes man change from one cosmology to another. The modern cosmology has outlived its usefulness because its hardened concepts stand in the way of this quest; but modern man is reluctant to accept the new and to part with the old. This reluctance to accept a new attitude which would engender a new cosmology is what we are attempting to break up, first, by proving the old inadequate, and, secondly, by sketching in the most general manner a map by which a new order might be helped on its way.

CHAPTER V

THE FORMS OF FINAL CAUSATION

1. THE EXISTENCE OF VALUES

In this chapter we propose to outline the important conclusions for which the foregoing chapters have cleared the way. Our argument so far has been to prove that the key problem of entire man is the problem of value. To present this proof we have had to expose the fallacies inherent in contrary positions, for instance, in physics and psychology, which, although abstracted aspects of entire man, tend to pose as full concrete descriptions. Discarding fallacies, we have nevertheless accepted whatever in these sciences was seen to be affirmative and least delimiting.

Specifically we have considered the contemporary metaphysical assumptions which deny objective reality to values: that of classical physics, which allows objective reality only to extended particles in motion and relegates all else to the mental or subjective; that of common opinion, which follows classical physics in so far as it grants objective reality to the world of matter but denies it to all values, notably, the ethical, the aesthetic, and the religious, and, lastly, that of modern physics, which seems to assign objective reality to no part of the phenomenal world but to deem it all subjective. To believe that values are subjective, which is to say, not primarily real, is, first, to set up matter neutral to value as primarily real, and therefore to make it an object of worship, and, secondly, to declare that ethical, aesthetic, and religious criteria are impossible, and are but personal judgments in a universe indifferent to value. Obviously this is a conclusion which the human race is loath to accept; nor can it be accepted unless the evidence is unanswerable. The conclusiveness of this evidence we examined. Taking qualities as divided into subjective and objective, we found nowhere justification for such

a division. All qualities turned out to be either subjective or objective, depending upon which end of the knowledge relation was being stressed. And thus values are shown to be, as to objective reality, in every way equal to the phenomenal world. Indeed, any view of the world, even the empirical, necessarily brings in values.

The fallacy of empiricism was traced in its origin to a single-minded concentration on an abstraction, this abstraction being the world as made evident to perception with the attribution of value deliberately omitted. In other words, this empiricism obstinately omitted the purposiveness of perception, striving to disallow all final causation. By so doing, it necessarily took no cognizance of the connectedness, the relatedness, of percepts to each other and to all else. The meanings which the world holds for common experience were thus suppressed; and the disconnected parade of phenomena which is left becomes *ipso facto* nonsensical. A mechanism was the logical outcome when efficient causation was illicitly introduced. We say illicitly, because efficient causation is the attribution of values of a sort.

By its prohibition against the attribution of values, empiricism put itself in the position where it was logically forced to go further and abstract sensory values from the empirical world, leaving only a world of extended particles in motion. But it was unable to stop even there; for modern physics pointed out that such a colourless abstraction would not bear objective analysis, but lost under such analysis, absolute space and materiality. There was thus left no empirical world at all, but only "empty space welded on to empty time."¹ This paradoxical conclusion still leaves some physicists believing in a mysterious ultimate substratum. But it was folly ever to suppose that the procedure of natural science could lead to any judgment about ontology since, as we have shown, physics was never concerned with the phenomenal world as naively as it assumed itself to be, but rather with abstractions from an abstraction, that is, with particulars *in abstracto* from which

¹ Jeans, *The Mysterious Universe*.

certain abstractions, notably, operational concepts of measurement, were taken. Wherefore the whole edifice of physics was found to be abstractive, rational, conceptual, and ancillary to common experience. Physics in itself thus has nothing whatever to say about values, and constitutes no direct argument pro or con as to their existence, although it has indirectly proved that the removal of all values leaves no world at all.

For the one-eyed empiricism to which both physics and the modern world have subscribed we are substituting an empiricism of entire man, holding that the last appeal in philosophy must be to experience in its totality. This means, primarily, that questions of the knowledge relation cannot be deliberately passed over as they were at the inception of empiricism in the Renaissance. Things are hard stubborn facts, or what you will, only in so far as they are known as such. Man has no revealed assurance that what he perceives as discrete particulars is the basic starting-point for further inquiry into the nature of what really exists. On the contrary, our argument has shown that no particular has meaning except in terms of universals, and that universals have no meaning except in terms of other universals, which other universals in turn acquire meaning by pointing beyond themselves. Thus to understand the merest particular is to invoke the world and the whole constitution of man, as well as the relation he holds to the world as its knower. For a universal or concept is a symbol requiring, first, something else which it represents, and, secondly, someone to whom that representation is made. We therefore turned to an examination of experience as it presents itself to the knower.

The elimination in current psychologies of final causation we found to be a crucial error, and clearly indicated that in imitating the methods of physics the psychologists have hopelessly sterilized their findings by neglecting to examine the whole of experience. We showed that without selectivity or purposiveness the "empirical" facts of mentality are chaotic. Interpreted in the light of a purposiveness, these "functions" were shown to be conceptual aspects or abstractions from the

total mental datum. The mental process, which is a purposiveness, we found to constitute the clue to the psychological and epistemological problems; it is the quest for value which, though hindered in various ways and taking tortuous routes, leads toward a finally unattainable goal. This argument was reinforced by an analysis of reason and its positive element, affection, and went to prove that the world of matter *per se* (extensive values or historical identities) is nearly valueless and overlooked by reason in its affirmative aspect which does not take historical identities into account, even though it must employ them in its operations. Moreover, the world of matter in this sense is forgotten in the evaluation process, the automatic selection through the category of time of what is more valuable. This automatic process we found to be appetitive in that the selection of some values and the rejection of others seems consciously wilful, but the appetitive aspect is confined to the fact of selectivity itself. The values selected are presented to the knower as affects, which are symbolic because partial aspects of value or affection. Thus we arrived at the conclusion that affects are the only stuff of the world of experience

We come to the apparently paradoxical judgment that the empirical world consists entirely of affects or values which include the primary qualities, as well as the secondary qualities which physics rejected as *sensa* or dubbed mental or subjective. The concrete world of common experience is not illusory, but is true for all it seems to include. The grand profusion and beauty of "nature" is neither a subjective reading of colourless particles in motion nor a creation *ex nihilo* of mind; but it is a partial hint of the profusion and glory contained in infinite non-symbolic value. Underlying the values which the mind knows, there is no mysterious *ding an sich* or substratum. Yet these finite values are a conditioning of value, required by the necessary limitations of discrete being, and must remain symbolic, broken up, and thus in a sense fictional, because it is only the fact that they point beyond themselves to an infinite

that makes them values at all. Man cannot attain beyond man, even though it is essentially human to know that something lies beyond. So man is the measure of all things only because man could not be man, were man all.

Since all that is, is value, value with the delimitations put upon it accounts for the whole of experience. No proper things exist, but value distorted by limitations into logical fictions called things. Value thus delimited yields values, which are thus differentiated according to their distortion or fictionalization; but all values are true in so far as they are affirmative. Some values are more abstract or acute; others are more concrete or suffused. The most abstract or acute values are what are described in epistemology as *sensa*.

Sensa, or sensory values, have been treated as entirely different from other values, and are generally thought of as the primary data of knowledge, "the given in experience." That they are given in experience, we do not deny; but that they differ from other values in this respect is what we take exception to. Discrete as sense data appear when deliberately abstracted from the more concrete objects of perception, they are yet meanings or values in that they refer beyond themselves to other meanings, and thus they are objects of perception themselves. But in no wise do the more concrete objects from which the *sensa* were abstracted differ in kind of knowledge, since these objects, too, refer beyond themselves to acquire meaning. There are not two kinds of knowledge, *datum* and *cognoscendum*,² but only one kind which includes both; for the object of knowledge is always a meaning, quasi-discrete and actually representative. Any distinction between kinds of knowledge would have to be drawn on the basis of more or less acute or abstract. It cannot be denied that there is no criterion in common experience for the division of sensory values from

² *Datum* and *cognoscendum* are terms employed by Arthur O. Lovejoy in *The Revolt Against Dualism*, *datum* as immediately intuited sense knowledge, *cognoscendum* as the subsisting object which the *datum* represents.

other values. *Red* is not merely the discrete affect, red; it may be also warm, bold, loud, striking, beautiful, etc. Again, love may be sweet, soft, hot, lofty, etc.

The separation of *sensa* from other values is an extremely sophisticated abstraction, and one made on the epistemological hypothesis that *sensa* are the direct effects of physical stimuli, existing as radically different in nature. But the given in experience cannot be the direct effects of physical stimuli, for as Kohler has demonstrated, what the epistemologists would describe as sense data are organized wholes, that is, they are perceived as units requiring the relations of parts into a system, or they could not have arisen. Kohler, for instance, points to the von Ehrenfels quality of "rough" and states that "there is no character like roughness in purely local experience of touch."³ How, then, can one distinguish sense data proper from objects inferred? If this distinction is purely arbitrary as to more or less immediate knowledge, neither will it hold for more general knowledge. If *red* be a more acute value than *red apple*, then red apple is only a more acute value than *good eating red apple*; and *good eating red apple* is a more acute value than the fact that *Robert Smuth enjoys eating good red apples*, although this last fact and the fact of *red* are both values, not differing essentially in nature. Sense values differ from other values in rank but not in kind. Specifically, the former are more acute, the latter more suffused.

The obvious objection that a basic distinction exists between *sensa* and other values, because sense organs alone apprehend *sensa*, whereas other values do not require sense organs for apprehension, will not hold. It is an unwarranted assumption that the tactile meanings which physiology discovers are equivalent to sound, or other non-tactile *sensa*. We have called sound waves, for instance, the signals for sound. Sound waves should be understood as themselves meanings, not differing radically from other meanings, which they may signal. The signals, sound waves, are more abstractive and reduce to the

³ Kohler, *Gestalt Psychology*.

sense of touch which is itself irreducible. The present is *defined* by attention to these most abstract meanings, since discrete being requires them. But common experience will have none of them in their nakedness, and covers them with more concrete (albeit still comparatively abstract) meanings.

The values which are more acute, abstract, discrete, like *sensa*, are thus always in the present; and they tend to lose their acuity as they slip into the past; the values which are more suffused, concrete, general, like the aesthetic, are elusive of the present and assume a greater clarity in the past. Once again we see that the category of time is intimately concerned with the problem of values. Indeed, the past is but the necessary category for the evaluation of values which could not be evaluated in the present because of the devastating acuity demanded by the tension of discrete being. As stated in Chapter I, reference to the past is reference to identities which desert from lesser significances and inevitably persist.

If all experience, then, be values, differing only in degrees of acuity and suffusion, we are given a criterion for arranging them into a hierarchy with the most suffused as the highest, and the most acute as the lowest. It is a basic condition of human life that those values which are of the greatest importance are the hardest to grasp, and that those which are the most demanding and importunate are of least importance. Those suffused values are the only ones that humanity can truly be said to be concerned with; aside from these values, living is the constant irritation of inconsiderable trifles. The problems of primary interest to humanity have always been those which may be grouped into the categories of the good, the true, the beautiful, and the worshipful. The good, the true, the beautiful, and the worshipful are, of course, ideal aspects of infinite value.

The true is not by itself an affectual value, but deliberately deals through reason with values as counters in order to relate them; but in so doing it passes over the consideration of these counters as counters or entities, and takes cognizance only of

the affectual or valuable content of entities. Thus the true *serves* value. The consideration of the true belongs to the category of reason. The truth may seem beautiful, or it may seem good; but its beauty or goodness has nothing to do with the process by which truth is attained. We have said before that the true presents itself as the greatest inclusiveness of all rational fictions, whereby they are related into the most inclusive legend. No truth can be finally demonstrable, since its applicability is tentative. Every truth is a contingent limitation, and thus contains some degree of falsity. But the falsity is continually being demonstrated. The true can never be attained, but is constantly being approached. The limitation of every rational truth is inescapable by default of man's capacity to perceive the whole of basic unity. Thus falsity is a product of limitation and is always negative.

In Chapters I and IV we have discussed the status of the true. In this chapter we shall discuss the good, the beautiful, and the worshipful, which are terms to denote ideal values, reflections of infinite value. Inasmuch as the quest for the infinite is ultimately unattaining, man can grasp only finite objects which participate in these aspects of value. In experience, then, the good object, the beautiful object, and the worshipful object, are the closest approximations to infinite value. These are the most significant finite modes which value takes; thus we call them the forms of final causation.

11. COMMON EXPERIENCE AND THE GOOD LIFE

In order to determine where these values enter human life, it is necessary to examine common experience. Throughout the book we have often spoken of common experience, which now requires more exact definition. Common experience is a loose term, covering the general run of conduct and opinions of the ordinary man; it is what we have referred to as action, in the only ways that action can be known: as both appetitive and rational. Common experience is not a hard and fast category. It is a mixture of naive experience and common sense.

Naive experience is the reading of experience by the individual, apart from common agreement. Common sense is, first, common agreement as to historical identities, and, secondly, the metaphysical construction or explanation which is current to account for the world. Naive experience is constantly being corrected to common sense.

Common experience is the category from which all types of knowledge start and to which they are ultimately answerable, since each type begins as a particular abstraction from common experience. All varieties of knowledge are of value only in so far as they serve common experience. This statement applies to all systematic bodies of knowledge, the sciences, as well as philosophy in all its branches. In common experience we include not only everyday life but also all ordinary activity, more or less humdrum or spiritual. Indeed, common experience might be termed the continually shifting compromise between the humdrum and the spiritual, the discrete and the significant. Common experience does not come in separate packages of each, but mixed. For instance, the world of matter, as we have described it, or as physics treats it, is not known to common experience; but always these abstracted aspects are suffused more or less with all kind of meanings or values. There is a sort of norm in common experience which allows a certain amount of leeway in the directions both of discreteness and significance. This may be easily exemplified; for instance, a man hangs a painting on the wall in his home. As he drives the nail he must attend to certain abstract considerations, such as the hardness of the wall, the angle of the nail, etc., which of necessity preclude his appreciation of the painting. At another time, he may stand in rapt admiration of the painting as an artistic achievement. But by ordinary, the painting is only a warm spot in the room. Common experience thus hovers around a medium, never becoming quite as abstract as science which is the abstract extension of it, nor quite as concrete as the fine arts which are concrete extensions of it. Common experiential knowledge is only reliable for the most

ordinary activities; common experiential perception never leaves the discrete very far behind.

If, as we said, naive experience is constantly being corrected to the current rational background, it becomes of vital importance to the good life that this background be one which enriches instead of impoverishes living. The rational background of an age is what we have elsewhere termed a cosmology, a complete legend into which all experience is somehow made to fit, the apotheosis of certain values and the cancelling out of certain others. Wherefore to change the rational background is to effect almost a metamorphosis of man himself. It is obvious, therefore, that animistic man, classic man, or mediaeval man differed from modern man not only in opinions and beliefs. They differed in their entire outlook to such an extent that the whole flavour, texture, and meaning of an ordinary scene—a sea coast, for instance—would have so little in common for them that it could hardly be said to be the same sea coast. This is because each allowed reality to attach to only certain values, and shrugged off or disallowed other values as unreal or illusory. Should a modern man see the form of another in smoke, he would dismiss the idea that this was an apparition, by being certain that it was an accidental form which the smoke had taken; whereas mediaeval man would be sure that what he had seen was a ghost, which had first taken form and then vanished in smoke. On the other hand, modern man believes in the real existence of a thing called electricity, which to mediaeval man would not have been a thing at all but the form of the Evil One conjured up in the exercise of the Black Art. It naturally seems to us moderns that modern man has the better insight, perhaps because our rational background has given us more practical control; yet certainly the modern age has thereby forgone much that seems to make life more worth living by the subscription to such a workaday attitude. We may compare the modern age with a practical prosaic man who misses most of the suffused values, and the animistic age with a dreamy man who finds it difficult to cope with

the ordinary exigencies of living in the world. Thus the question of a compromise between practicality and fullness of appreciation is bound to arise in the consideration of the ideal rational background for the attainment of the good life.

This question is not one which can be settled offhand. Nevertheless, we have no hesitancy in stating that the rational background which moulds the modern age has impoverished living by the cancellation of so many values which are imperative for the satisfaction of entire man, that the contemporary outlook has become as dull, trivial and uninspired as a laundry bill. The modern world has, of course, its source of inspiration, an inspiration which is best exemplified in the accomplishment of physical science. This inspiration consists in the control of the external world for "practical" purposes; but practical control amounts to slight compensation for the loss of spiritual values. Such a misguided emphasis on the discrete rather than the significant creates a disjunction of values which is all but chaotic and disastrous. The modern world not only fails to see the forest for the trees but also is beginning to fail to see the trees themselves for the molecules—or the lumber. Nor can a contemporary business man see even the lumber for the merchandise, or the merchandise for the abstraction of net profit and loss. Unfortunately, such an abstractive series never leads back to the concrete, but on the contrary the most abstract becomes an end in itself, and succeeds in becoming mystically regarded as almost an object of worship. On the intellectual plane we find the philosopher, Bertrand Russell, saying, "I think the war made me feel that there would not be much point in the realm of essence if there were nobody left to think about it."⁴ From this we draw the obvious conclusion that Mr. Russell thinks that the war and the "realm of essence" are two radically different things which have no relation whatsoever. But certainly Mr. Russell would agree that the war was not a thing in itself but must have had back of it some kind of ideological source, which in turn had

⁴ *Mysticism and Logic*.

its basis in an ontological belief of one sort or another Mr. Russell's kind of thinking is merely the emphasis on the more discrete as real and the remainder as a lower and subjective order of reality. It is the same kind of thinking, so prevalent to-day, which insists on a return to "the realities of life," by which is meant certain abstractions from tangible relations, like "economic factors." It is no wonder that the fine arts and religion are said to be "escapes from life"! This absurd reverence for the discrete, the temporal, and the proximately practical, comes about through the attempt to invert the proper hierarchy of values which invests the valueless with value and slights the significant with subjectivity. But certainly this is an impossible procedure, for it tries to divorce reason from the inexorable evaluation of values, wherein identity inevitably attaches itself to the higher significance in preference to the lower

What sort of rational background would we substitute, and especially what changes in common experience would it lead to? The following perhaps requires an apology for its unavoidably *ex cathedra* tone, but we can only indicate what we believe should logically follow if our argument is valid. We would substitute the belief in the ascendancy of those values which must be ascendant, and the cancellation of none. We say must be ascendant, because they always are, whether so admitted by the current rational background or not. These ascendant values, the appetitions of entire man, are, primarily, infinite value with its manifestations in the good, the beautiful, and the worshipful. The allowance of the equal reality of all values throws no dubiety over the phenomenal world, and at the same time gives that world a richness of meaning that the nominalistic denial of connectedness and values does not permit.

If the cancellation of no values seems to nullify the advance in scientific knowledge, we can answer that this objection is based on a misreading of our principal ideas. First, we state that all things are equally real yet not all equally valuable.

Therefore the fact that only certain aspects of reality are involved for certain purposes and on particular occasions, does not invalidate the reality of the other aspects which at that time were better omitted. The fact that Niagara Falls is impressive or awesome, or is iridescent in sunlight, is rightly overlooked in the mechanical problem of harnessing its energy. But this does not mean that such neglected values are illusory: they are simply neglected. Contrariwise, a lover of natural scenery who sees only the grandeur of the waterfall may ignore its horse-power, without thereby implying that such value is not applicable: again, it is simply neglected. Neither aspect of Niagara Falls is the more real; each is separately valuable for certain purposes. As we pointed out in Chapter III, the earth may be considered a sphere for certain purposes and flat for others, without thereby asserting or denying the reality of either view; neither view can be considered exclusively real, nevertheless, one contains more truth than the other, and is thus more valuable. Similarly with the ghost, it is real; yet it has more truth, and therefore more value, as an intangible thing than as a near tangible thing belonging to the world of common agreement. The elasticity of intellect necessary for the allowance of the truth of any given aspect within limits, whereby any aspect does not invalidate any other aspect, is required by the rational background which we would introduce. No aspect of a thing can be real at the expense of the reality of any other aspect. This is equivalent to stating that no absolute is discoverable in experience.

The question of the equal reality of all things is clarified if it be remembered that *things* are only logical fictions affirmed by positive affects or values, and that what makes a particular physical apple different from an imagined apple is that the former is made up of certain affects not entering into the latter. These consistent affects of the physical apple are not blown into thin air by the understanding of the fact that they are not more real than those of the imagined apple, or by dropping the belief that there is a *ding an sich* underlying those

of the physical apple. The modern mind is accustomed to the idea that when one apple is added to one apple to produce two apples, or when a price is placed on apples, no judgment of reality is thereby implied, yet also there is no distrust of the adding or the pricing of apples. Tangible relations, however, have seemed to be different as somehow constituting the *real* apple. Common sense will have to get accustomed to the idea that the tangible relations are no more real than any other relations, and that hardness, weight, density, etc., are no more radically germane to the object than are price, edibility, etc. This will not make the world of tangible relations less hard and fast, and consequently less reliable, than it has been; but it will to a certain extent free man from the tribute that other values have been made to pay to the tangible.⁵

The lowered estimation in which our rational background would place tangible relations does not imply that what are called imaginary objects are of the same status as the tangible. It does, however, assign equal reality to rock candy mountains, Fortunatus's purse, adept virgins, and other phantasies and "figments of the imagination," but it certainly does not make them historical identities. These are hybrid ideals which do not fit in with the tangible character of the things the human race has selected as dependable and apparently indispensable. Freudian psychology would call them "wish fulfilments";

⁵ One task which our ontology may make somewhat easier is the task of freeing man from bondage to the sense of touch. All animals and indeed all organisms seem to have a sense of touch, even when seemingly possessing no other sense, for the sense of touch is basic. The proof of this assertion is that without it there could be no discrete being, it is the means by which beings *fight off* the world about them and maintain the fiction of separation. It is little more than the effort to maintain discrete being. But the other senses, for instance, sight, are more sophisticated, and include more than does touch. Perhaps this may be an indication that the intangible and even the invisible things are truer than the tangible and the visible. If the assumption be made that in organic evolution the sense of vision is "higher" in the series, then there is presented the interesting hypothesis as to the direction of evolution, namely, toward the apprehension of the more inclusive and the more valuable.

but they are incompleated fulfilments and the tangible things could better be called "wish fulfilments" of the human race, since they are, like all wishes fulfilled, as much a hindrance as a benefit, and become merely the familiar furniture of ordinary life. Although these phantasies lack common agreement, and more specifically substance, spatial position, and are ahistoric, they are as much things as are bricks and powder puffs, since they are affects: (1) quasi discrete, and (2) truly representative of values beyond.

The difference in status between the tangible and the imaginary may be made clearer by repeating our argument that the important values are the suffused, and that it is man's tragic limitation that this must be so, for he continually grasps after the suffused values in an effort to make them discrete, historic, and present. Yet he never succeeds, for a value which is grasped in the present loses most of its value. The distinction between what is *actual* and what is *imaginary* boils down to what is graspable, which is to say, substantial, tangible; yet even the tangible in common experience to some extent is suffused with values other than the tangible, although these values, as they rise in the scale, become more suffused and naturally seem less inherent in things than the tangible. Man, of course, cannot abandon the world of tangible identities and remain man; but he can free himself from the honorific ascription of reality alone to this world, and thus far loose himself from the tyranny of substance.

Equally our metaphysics would free man to some extent from the tyranny of the clock. The notion that the present rides on the second-hand of the clock and is for ever fleeing away we have characterized as an absurdity, since a moving second-hand yields no interval, however infinitesimal; and thus, as was pointed out in Chapter I, if the present were but a meeting-place between past and future, there could be no knowable present, and consequently no memory of a past or thought of a future. This denial of clock time as a definition of the present is closely related to the denial above of the

superior reality of substance. For clock time may only be defined by the coincidence of the here-nows of different individuals. But here-now, as we have shown, is a judgment of tangibility; and there-now is a judgment of tangibility in that it demands the belief in the continued tangibility of objects when not touched. Without this belief, clocks could not be synchronized.⁶ In order to free yourself from the belief in an infinitesimal present, it is necessary to free yourself from the conception of the superior reality of tangible identities; or, reversely, to free yourself from the dominance of substance, you must be freed from the insistence of clock time.

With touch alone, as we demonstrated in Chapter III, no continuity could have been arrived at; but this was achieved with the aid of vision. Touch without the concept of spatial continuity can yield only unconnected resistance points. Thus an organism with only the sense of touch cannot reach out and spatialize its world, but must feel its world as a tactile instant. For such a creature the present must approximate the infinitesimal present of clock time, and no past can exist. When, however, other senses, notably sight, co-operate with touch to yield a spatialized world, the present is broadened and is no longer accurately described by clock time. Thus the more values, the broader the present. Vision is the limiting sense of what is called the present. For although all values are in the present, the time category of past and future are partitions by which other values than the sensory are categorized. The past is considered as having been actual, whereas the future is considered as a potentiality for actualization. But whether what is present as past has ever been actual is a meaningless question, except on the level of tangible identities; and the important question is the value of what remains of the past.

All tangible identities must be more or less perishable, because substance is the most fictional of all values; and thus all substance tends to revert to an equilibrium. Other identities

⁶ See p 151

exhibit their fictional nature by falling out of the past and deliquescing; or, as we had it, identity refuses to attach to less valuable meanings.

We are, of course, not suggesting that man is capable of dispensing with substance or with clock time, or that he ever will be, or that he should be; for these are required by the form of his being. Our point simply is that to give undue consideration to these things is to lay emphasis on exactly the wrong elements of experience, to mistake the discrete for the valuable, the acute for the significant. It is to make "practical" what is, according to the only criterion of value that man possesses, impractical. In so far as he can depart from the obsession with substance and the flight of time, he brings more value into his experience, and thus by making his life richer, he approaches his goal of the good life: the reaching out toward the more inclusive values.

The good life, then, would be that life which, though necessarily taking account of the world of common agreement with its categories of substance and socialized time, would yet give it due consideration as endowed with only as much value as it can support. The good life will be guided by the understanding that such values with which it endows substance do not necessarily remain qualities of that substance. It will then accord to all things values only in so far as they are not discrete things but meanings which refer beyond; and such attribution will be measured by the very extent to which the things refer beyond. The good life would be reconciled to the fact that those things which are the most significant are the least attainable, and that those things which are attainable are of least value in direct ratio to their attainability. It would know that what is momentarily the most acute is the least important, and that this is the inevitable individual tragedy.

This means finally that the good life must accept the heroic attitude, the sacrifice of the acute, the seemingly valuable, for the suffused and the significant, although this momentarily

seems too great a sacrifice. On the highest plane this may mean the sacrifice of life in favour of an impossible ideal; and even on a lower plane it may mean the renunciation of what is acutely and imminently desired for what is ultimately desired. This choice may be the agonizing tearing away from those things which have constituted pleasure and happiness; yet it is in this choice that pleasure and happiness lie. This is not to be construed as an exclusively stoical doctrine; for much of life is not lived on the heroic plane. The point is that if you are prepared to live so, lesser satisfactions truly become pleasures for all they are worth. This is what Nietzsche meant when he proclaimed that life should be lived dangerously.

It is to men like Buddha and Jesus that we must turn to see what the heroic attitude means at its best. These men reached toward an integration of all things unattainable by ordinary men, because they were able to endow everything with the utmost value in so far as they saw things as infinitely interconnected. They endowed stones and rivers and trees with the greatest possible value, not as discrete entities, but as symbols gathering together the largest number of relations.⁷ Discrete things they awarded little consideration without insisting on their unimportance. To consider these men as exclusively ascetic is to miss their signification; the emphasis of their teachings is laid on renunciation only because they knew that the ordinary man must renounce the proximate contentments of ordinary life that even the proximate contentments be valued. "To lose your life is to save it."⁸ To live dangerously is to be always willing to lose your life in order

⁷ The attribution of a sort of human life to inanimate things by animistic man, brought about a much richer apprehension of the world than modern man is capable of. A tree must be a more exciting affair when you believe that an individual and near-human spirit inhabits it, and the innumerable instances of such belief naturally thicken experience. Modern man has traded his richness of perception for a practical control, a very questionable bargain.

⁸ "Seek ye first the kingdom of God, and his righteousness, and all these things shall be added unto you." Here is the same thought, although it has been wrongly used as a defence of Phariseism.

to save it; here Christ and Antichrist become one and the same. Men like Buddha and Jesus are more clearly men than others because they more nearly made all things their own, or diffused themselves over all things. Again, we see identity attaching itself to the higher significance in preference to the lower; the identities of Buddha and Jesus remain not as discrete selves but as suffused meanings.

However, the wayfaring man cannot be expected to live on this exalted plane, and in considering the good life we must assume more or less the level of wayfaring man. In a more limited way the same attitude will apply to ordinary life that applies to the heroic. There is no satisfaction or pleasure which resides in things *qua* things; the pleasure resides in the values of things, that is, in so far as they refer beyond themselves. Thus we would introduce a materialism such as we have supposed the Classic world to have had. This means the exact opposite of what is loosely termed materialism to-day. Modern "materialism" is above all an obsession with things in their abstract tangible relations, i.e. with ownership. The truer and preferable materialism is a concern with materials in their most concrete possible aspects. This is a sensualism, if by sensualism is understood not only an interest in *sensa in abstracto* (what the senses are supposed to report), but also all connotations which sense objects include. Thus a man who enjoys the feel of good velvet, the richness of the colour, the depth of the pile, sees by its weave that it had been made in Bruges, and appreciates the tradition back of the industry there, is a good materialist. On the other hand, a man who wishes only to own this velvet because it is expensive, and who cares little for its quality and knows less, is a bad materialist, but nevertheless a materialist in the modern sense; we would call such a man a vicious abstractionist. If the materialism which we submit still seems to be an Epicureanism which contravenes our belief that proximate ends must be continually abandoned for more and more remote and ideal ends, we can reply that Epicureanism is a perfect expression of the good

life—the philosophy of Epicurus which stressed (illogically from his own metaphysics) the pursuit of the higher values. But of course Epicureanism has been misunderstood as the philosophy which put all its emphasis on the tangible pleasures. This kind of Epicureanism we believe absurd, inasmuch as values do not inhere in things; and therefore the conscious pursuit of pleasure is sure to be continually traduced, since it makes the mistake of relying on the tangible to retain values which it cannot retain. To live in the moment, as Epicureanism advises, is the right way of life, if it is understood that that moment is longest which is most significant, which brings all the past and the furthest reaches of the imaginative future into the present. The point is that the more inclusive values disappear when a thing is abstracted from its context. How often one has become enthusiastic over a vacation spot only to find on revisiting it under other auspices that it is flat and ugly. Beautiful objects may become hateful when contemplated under circumstances which deprive them of their context. The ivory tower is a pleasant phantasy; in actuality it would be more than a little stuffy. A thing is valuable for what it symbolizes, not for what it seems to be in itself.⁹

The stoical and the epicurean are not opposed but complementary doctrines. To enjoy the goods of life it is necessary to be ready and willing always to bid them farewell; and this heroic attitude is the only one which is blithe enough to taste the goods of life to the full. The good life is this balance which assigns as much value to a thing as the whole occasion warrants, but knows of occasions when this value will not be supported because the thing as a thing has no value. As Havelock Ellis puts it, "all the art of living lies in a fine mingling of letting go and holding in."

Does our philosophy yield a criterion whereby we might deduce the proper place of social control in the good life?

⁹ We say, "seems to be," because we have shown in Chapter III that a thing, no matter how bared of meaning, still remains a thing only by virtue of the fact that it symbolizes something beyond.

In other words, can we state how far the individual should be free to pursue his own aims, apart from all considerations of his fellows? It seems to us that a certain answer is required by our philosophy. Social control should be exercised in exact inverse order to the hierarchy of values. Thus the most important function of social control would be the proper control of all tangible relations, inasmuch as to the individual they are both importunate and truly trivial concerns. That government which best takes care of all the basic and primary requirements of its people, as, for instance, decent subsistence, is the best government, always provided it does not at the same time control those things which characterize themselves as the more valuable. In general, as values become higher and more suffused, they get away from what can be socialized and toward what must be left to the individual. Thus, broadly speaking, a good society is one in which no coercion is exerted on the spiritual life of the individual. What can be strictly regulated by law are only tangible relations; what can be loosely regulated by custom are relations which are more or less agreed on and which are slightly higher in the scale of value than tangible relations; what must be left to the individual is the whole higher group of values which are highest in the scale. For instance, property can be regulated by law; sexual relations can be to a less degree regulated by custom; and the fine arts must be left beyond regulation to the choice of the individual. It must be understood that we are not here stating that even the fine arts are a purely individual expression, since all human activities are in a sense social or they would not be human; we are merely discussing the extent of the feasibility of social control. The strength of communism is that it does control tangible relations; its weakness is that it tends to wrongfully lay mandates on those higher values which should be left to the individual. Conversely, the strength of individualism is the liberty it allows the individual in his pursuit of higher values; its weakness is that its lack of control of tangible relations tends to result in a chaotic and unjust distribution

of tangible things. A law is bad which dictates how people must dress or what their table manners must be; a custom is bad which coerces an artist into painting only certain subjects, or which insists on an authoritarian ethics; all such laws and customs will be openly or covertly evaded. But, equally, an individual is dangerous who satisfies his desires unrestrainedly in the field of tangible relations, and is ridiculous and crass who goes contrary to all accepted manners. Loosely speaking, ninety-nine per cent. of man's activity is definitely social; but it is the other one per cent. which alone makes life supportable. It is these highest reaches of value, these hints of significance, which keep the rest of life from being a sorry business.

III. ETHICS

It is well to distinguish between ethics and morality, since the two are so frequently confused. We define morality as the more or less hard and fast code of conduct set up by the customs of a people. It is authoritarian in that, though sometimes rationalized, it is accepted irrespective of such rationalization. The ethical judgment, on the other hand, is the personal judgment of conduct as right or wrong, possibly indifferent to the current morality. Thus a moral act may be judged right and very often is so judged, but not necessarily so. An act judged right may be moral, it may be immoral, or it may have no connection with morality, since the ethical judgment is involved in problems which need not touch custom with which alone morality is concerned.

Morality assumes an absolutism in that it holds certain acts unqualifiably right or wrong. Of course in practice no peoples, even the most moral, have ever strictly followed a moral code, but they have believed in it, nevertheless; and with even the most immoral peoples it is always a normative affair against which all social acts requiring judgment are measured. A moral code is adequate to a certain extent and for a limited set of actions. Those actions are the actions which almost all people would agree were generally right or wrong according to their

own ethical judgment. Therefore a morality may be called the averaged ethical judgment of a people, applied to the most common social conflicts, standardized, and hardened into a code. Morality may or may not be reinforced by the laws of the State. Thus murder, rape, and arson, are nearly always considered immoral and criminal; but drunkenness, miserliness, and the wanton expenditure of money are also considered immoral, although there be no laws against them. There are, however, many occasions when even murder or drunkenness will be considered justifiable. This is evidence of the fact that all people recognize the existence of a higher judgment than the moral—namely, the ethical. Moreover, there are actions which satisfy the moral code but which are not considered ethical; and history is full of examples of men who were compelled to break the moral code in order to do the thing ethically judged right. Thus we see that morality, although indispensable to a society as a practical and normative affair, is inadequate, because, first, it does not always hold; and, secondly, it does not cover the entire field of judgments of good and evil. Some kind of ethical criterion as a final appeal is always demanded for the rational evaluation of actions.

In general, the ethics of an age is the individual judgment from the rational background of that age as to what is good and evil in the light of what that age holds most valuable. Thus ethics is altogether and inescapably concerned with the problem of values. Whatever values an age considers ascendant and whatever values it considers less important depend upon the whole metaphysical assumptions of that age, as we have been endeavouring to show. Therefore ethics cannot be separated from its ontological roots. Contemporary attempts to set up an ethics without reference to metaphysics have overlooked the invariable and ultimate dependence of evaluations upon questions of reality. The ethics of humanism, of pragmatism, and other "ethics of the dust" which are but disguises for the ethics of pleasure and pain, have started with the kind of

subjectivism which tries to avoid or forget the question of what is believed to be primarily real. Thus such ethics have eliminated consideration of the whole universe, and dealt with only the narrowest desires of man as though these had no relation to all else. Humanism, for instance, has committed itself to the working out of an ethics which deliberately omits the idea of God and of the infinite. The fallacy of all ethics of this sort is the relativity of the sanction of the pleasure and pain of the individual. If certain things and actions could be permanently tabbed as pleasurable or painful in recognizable degrees, such an ethics could be constructed; but pleasure and pain, even granting for the moment the correct opposition of these two terms, are dependent upon the significance attached to things and actions at the occasion; and this significance cannot be tied down to any discrete action or thing, but involves the question of the extent to which that action or thing gathers together or symbolizes relations beyond. Wherefore, to judge only by the pleasurable, is to judge by an entity which has no definition by itself. It is manifest only as related to values.

But whether the modern ethical theorists specifically deal with the sanction of pleasure and pain, or whether they clothe the sanction in scientifico-psychological language, such as urges, desires, etc., they are accepting the same relative and hence radically irrational basis for ethics; and the same argument as cited against pleasure and pain as an ethical criterion unqualifiedly applies. For instance, Bertrand Russell argues, "A man desires to drink, and also to be fit for his work next morning. We think him immoral [by our definition, unethical] if he adopts the course which gives him the smallest total satisfaction of desire."¹⁰ As T. S. Eliot succinctly puts it, "The difficulty with such theories is that they merely remove the inherently valuable a further degree."¹¹ In other words, the question of the conflict between the man's desire to drink and to be fit for work next morning can be resolved only by reference to what he may consider the more desirable. This

¹⁰ *What I Believe*

¹¹ *For Lancelot Andrewes.*

question, aside from the fact that it may be differently answered on different occasions, depending upon the whole involvement of value in the particular occasion, cannot be answered save by an appeal to what he considers *ultimately* desirable, which in turn is influenced by the metaphysical question of what is the real. The question of ultimate value cannot be dodged in ethics; and if all value is held to be but a personal and arbitrary judgment, no ethical criterion is possible.

Let us make clear that, although there is an ethical criterion, there can be no code of ethics. Ethics, being deliberately rational, is always *a posteriori*. there can be no code of ethics because there can be no ethical judgments in advance. Ethics cannot determine action. Ethics is the rational judgment following an action; it is useful as helping to relate an act to its context; it tells you *why* you are right or wrong and thus deliberately adjudges intuitive and immediate action.¹²

All actions are to some degree significant; the more significant, the more intuitive and immediate. They are appetitive, though this does not mean that they are irrational. We would recall here, in our discussion of reason as inductive and deductive, the statement that an induction is the immediate formation of a synthesis, and a deduction the deliberate relating of that synthesis with other syntheses within a particular legend. In the same manner significant action is immediate, and ethical judgments refer to these actions as good or evil.

We here draw a parallel between action, induction, and art, as all being direct, immediate, intuitive, and demanded. There is thus also a parallel between ethical judgment, aesthetic judgment, and intuitive judgment, where the affective value is presented as: in the ethical, right or good, in the aesthetic, beautiful; in the intuitive, manifestly true. And there is a further parallel between rational ethics, which deliberately reduces the good to the true; rational aesthetics, which deliberately reduces the beautiful to the true; and deduction, which

¹² The specific application of this ethical theory to concrete occasions is casuistry. Casuistry is thus but the practical aspect of ethics.

deliberately analyzes the intuitive judgment according to the rules of logic.

Like induction, and like art, of which it is but an aspect, action is unpredictable in so far as the particular form that the action takes cannot be rationally prefigured. We describe all such immediate processes as attempts to arrive at the greatest significance possible in the face of limitations. Thus, in the last analysis, all acts are symbolic; and it is the reach of their symbolism which determines their truth value. But by no deliberate process can this symbolism be predicated in advance, though afterwards it may be easily seen why such an act was significant. Critical acts often seem unreasonable and inexplicable, especially to the acting individual. They sometimes even seem fantastic and insane. Yet every such act is the expression of the greatest significance possible under the circumstances, and later can so be rationally explained. What seemed to be the most irrational and appetitive proves to be the most necessary and logical. Music has an almost mathematical construction, but no composer ever constructed it mathematically. Returning to the ethical consideration, the form of significant action can no more be rationally plotted than can great music be mathematically composed. It is to symbolism that you must look to understand action; and this is why the literary artists who have intuitively understood symbolism have gathered the most of life into their work. Dostoyevsky, as one of the greatest of these, was nearly altogether concerned with the ethical problem of action in its numerous implications. He wrote only of cases where the ethical stakes were high and of "plungers." His characters perform the most heinous crimes, never for the reasons for which they suppose they are performing them, but always because those crimes are the symbolisms demanded by the particular situations. What appears in Dostoyevsky's characters to be the most bestial and malignant is the desperate courage of the bewildered to affirm God and thus attain to significance.

As time passes, the value of all actions, the *reason*, becomes clearer; and thus it may be said that ethics, aesthetics, and deductive reason, are attempts to set the right evaluation in anticipation of time and subject to correction by it. They severally demand the answers to: wherein is it good? wherein is it beautiful? wherein is it true? Therefore that ethics is the best and most adequate which is subject to the least correction through the category of the temporal, the automatic evaluation of values whereby the more valuable persists and the less valuable is dissipated. An ethics can evaluate actions so that those evaluations approximately coincide with the evaluations which time will put *willy nilly* and without regard to ethical judgments, only if an ethics is constructed according to the hierarchy of values, that hierarchy which is clearly indicated by the direction of life, what identity attaches to and what it refuses, and is moreover reinforced in accordance with what is intuitively and immediately felt to be right. Such an ethics would be the best and most adequate ethics.

It will be seen from the above that an ethics must have an objective criterion, which means that it must rely on something besides an individual judgment of value, and therefore must be founded in what is accepted as real. The ethics that needs constructing if our metaphysical position is correct is one which must be built on that hierarchy of values which we have shown to be empirically evident, in that it has as its objective criterion the infinitely valuable, which is the ultimate objective of *every individual*.

In order to set forth just what our ethical criterion is and how it can be applied, we must take up in more detail the question with which ethics deals: the question of good and evil. Good and evil are but the ethical values of a particular situation in which, it must be remembered, they do not exclude any number of other values. A certain action may be either good or bad or partly both; but it may also be beautiful, American, difficult, etc. In what follows we are concerned with the problem of ideal good and ideal evil.

As the term, ideal, indicates, the good is never found in all its purity, but is only approximated as a value which qualifies finite things. Ideal good is that which is acceptable in the most affirmative sense, that which one yearns toward without awe, which is completely satisfying and utterly pleasurable. The good is itself affirmative; it has gusto, savour, sweetness. The mere refraining from committing acts considered evil is not good; and merely "being good" is not good. The good is never simply the negation of evil, but is something more positive: the grasping after the better, the more desirable. A universal symbol of what is good is food; for instance, the apple has come to be a symbol, as in "the apple of thine eye." Appetite refers first to the desire to eat, to taste. In the absence of canons of judgment, important decisions are often referred to as "matters of taste."

We defend possessiveness, since possessiveness is the aim of the good. Possession means assimilation, digestion, as Samuel Butler well understood. Acquisitiveness, so generally recognized as a universal instinct and so generally decried by ethical teachers, is of the good; but the question always is, how completely can things be acquired and possessed, and what things can be the most possessed? Our good materialist possesses things much more completely than he who has mere legal title to vast properties. Acquisitiveness is the desire to bring things as close as possible to the self; and an idea can be more completely possessed than an automobile. Whatever values can be assimilated, fatten the discrete self, since the discrete self is merely a fictional point around which values are clustered. The universal instinct to be "big" and important, or to fatten the self, what has been called the will to power, is the desire for the good. But the will to power does not necessarily have to be satisfied by material things. The good is the aspect of infinite value one remove more finite than the beautiful. Like the beautiful, the good is suffused affection; but the good is more clearly the object of appetite than the beautiful because the good is that aspect of the infinitely.

valuable which seems the most attainable and approachable. The good is less glorious and less awesome than the beautiful and is nearer to the level of common experience. The good is not beauty but is beautiful. The ideal good is atemporal; it is inconceivable that what is good at one time should not be good at another or for ever. A thing held good by one generation, for instance, may not be held good by the next. But this is no argument against the eternality of ideal good; on the contrary, the judgment of the second generation simply means that the good has departed from or no longer applies to the concrete occasion to which it was first attributed or attached.¹³

Between a good deed and a good beefsteak there is no radical distinction in so far as the attribution of good is concerned.

From the strictly ethical point of view, the good is attributable only to critical actions, and the best action is that action which reaches out and includes the most. There is a grain of truth in hedonism and in pragmatism, for the good is both pleasurable and practical. But both these philosophies put the cart before the horse, in that the good is what yields pleasure; but the good action is not always or necessarily presented as immediately pleasurable; on the contrary, the good action

¹³ It will probably be objected that this kind of argument is word quibbling, and that "good" is here but an adjective which has the meaning of desirable and only qualifies things, and that therefore when "good" is no longer attributable to a thing, the thing which was good is no longer good, or, plainly, that which was desired is no longer desired, for one reason or another. We do not object to the definition of "good" as "desirable", but it must be plain that the word "desire" surely means something beyond arbitrary caprice—it cannot be an affect without, or independent of, an object.

Even the most uncompromising psychophysical dualist would admit that an object is desirable for certain positive qualities which do not altogether inhere in the mind, even if these be but the subjective readings of the peculiar dance of the electrons. Thus if the electrons dance to another tune, and the thing subjectively seems different and undesirable, then desirability must be a somewhat constant illusion, and desirable an adjective representing a relation to a "real" event.

often seems the choice of stern duty instead of what is pleasurable; yet pleasure *follows* the good.

Likewise with the practical, there is no sure way to tell in advance whether a thing will prove practical or not. Thus as a guide to action pragmatism is impossible. The good is the practical, but it is not always presented as such. "Honesty," as Benjamin Franklin observed, "is the best policy." It is a platitude in the business world that dishonesty does not pay very long, for the simple reason that a customer, for example, once cheated never returns; and thus, no matter what the immediate profit to the business house, the transaction will finally represent a loss. But Franklin would ask you to be honest as a policy only for monetary profit, whereas it is the honesty which must be followed and not the policy, because the good is practicability of the widest sort, and in its higher reaches the practicability of the good is not so easily seen. Again, the good action at close range may seem to be the choice of the impractical instead of the practical. The good is practical in the broadest sense because the practical can ultimately mean but one thing: the effort to attain that which is ultimately desirable. Thus the good is rationally reducible to the true, since it takes into consideration and embraces the truest aspects of things, that is, the more affirmative and inclusive. It must, however, be understood that, although the good is rationally reducible to the true, and it is the part of ethics to so reduce it, the appetite toward what is good knows nothing of this, but recognizes its object in an immediate act. Chemistry tells us that our bodies are directly nourished by soaps and amino-acids and by other chemical products which would nauseate any man who tried to eat them. Apparently the body is best fed by what appeals to the appetite, for what appeals to the appetite as good turns out in the long run to be the most nourishing and therefore the most practical.

We know the conventional scientific answer—natural selection. But can natural selection explain why it was more to the taste of Jesus to drink the cup rather than let it pass from

Him, or to the taste of Socrates to drink another bitter cup rather than escape, more to the taste of Regulus to be tortured rather than break his word? Science may answer: abnormal, an answer which begs the question. But even so the question remains, why do normal people continue to approve and thrill to these acts? Why are they so much to normal taste? Is it normal to have an abnormal taste?

A good thing, a good act, is symbolic; and it is also part of ethics to explain the symbolism. In experience, the good object is immediately apprehended, irrespective of truth or beauty, as the affective good; and it is plainly an obscurantism to disguise this fact by describing the good as identical with the true or the beautiful.

The good act is appreciated as good, with or without an ethical criterion; but this appreciation must be bolstered by reason to be completely effective, in other words, by an ethical criterion.¹⁴ An act is immediate; the appreciation of action (what we have termed ethical judgment) is affective; the ethical criterion is rational.

The ethical criterion is the measure of the *symbolic* inclusion, in an act, of the greatest amount of practical usefulness.

This is not to be understood as a substitute method by which one can arrive at an immediate judgment of good or evil, but rather an objective method by which one can check or prove his individual judgment. Let us say, for example, that a desperate criminal is drowning and that you are in a position to rescue him. To allow him to drown would intuitively be felt wrong; to save his life even at the risk of your own would intuitively be felt right. Now, let us say, on another occasion it is in your power either to turn this man over to the police or let him go free. In this latter case, to give him up would intuitively be felt right; to let him go would intuitively be felt wrong. How comes it about that it should be felt that it is right to one time to save this criminal's life, and at another

¹⁴ The modern world suffers from just this: its rational evaluations do not agree with what it intuitively holds valuable.

time right to surrender him to possible execution? Can this difference in judgment be rationally reconciled? The answer lies in the symbolisms of the separate acts; for, in the first instance, to save a man's life is to recognize the value of that man as a symbol of the totality of human lives, since a man drowning does not represent either a criminal, or a husband, or a poor man, or anything but a human being; and, in the second instance, this man symbolizes the possible injury of other human beings, and thus is a criminal. The symbolism of the first action is the rescuing of humanity as represented by any drowning human being; the symbolism of the second action is the preference for humanity as against any one person. Does it need to be pointed out what chaos would be involved if every man constituted himself a judge of the guilt of another, if the power of life and death were within the caprice of any individual? Thus, practicality is involved in the good, and the greatest good of the greatest number is involved in ethics, but it can never be so demonstrated save through the analysis of symbolism.

We are now led to consider the problem of evil. Ideal evil is the principle of limitation; it is thus non-existent in any but an ideational sense; it is nihility, non-being, an impossibility. In the world of experience evil is the limitation put upon value. Non-being cannot be; but the hypothetical existence of non-being is evil in the world. "Evil is nothing positive."¹⁵ This fact has been recognized always. Besides Spinoza and Parmenides, compare Goethe's *Mephisto* (the spirit-that-says-no).

Evil is thus but a limitation of the good; it is the "temporary," the "ephemeral," the "fragmentary," as well as the "black" (the Prince of Darkness), the "void." But since limitation is always present in experience and finally irreducible, since the affirmation of anything must be accompanied by a quasi denial of all else, since all values are values only inasmuch as they are limited values, since all that is known is known in discrete

¹⁵ Spinoza, *Ethic.*

form, since significance is itself confined to symbols, since what is absent from apprehension is apprehended only as present, limitation is always a condition bound up in the fiction of discrete being, and the problem of evil ultimately remains. Nevertheless, there is no such thing as pure malevolence or an absolutely evil man. Both malevolence and evil are abstract considerations; and no act can be completely evil. You will never find a man who is malevolent from his own point of view or an absolutely evil intention; each man always acts from the point of view of what is good; and it is the vicious restriction of what is good for each man which causes acts to be evil to others.

Thus evil which seems to be positive is always negative. Evil seems positive because it is generally sudden and violent; but this violence lies in the negation of what is inclusive, positive, valuable, and related. It may be said that all things are both good and evil, because a thing may be good within its limits but evil when too much value is placed on it; and so a thing may be predominantly good at one time and predominantly evil at another, and *vice versa*. Thus again on some plane anything is good, since all things have some positive value, and on no plane is anything absolutely good, since no thing has infinite scope. Money, which is a very good thing when needed to purchase reasonable necessities and comforts, becomes an evil when its accumulation past ordinary purchasing usage is given any consideration.

The fact that the principle of evil is limitation or discreteness is certainly no argument that the world of experience must be evil because it is limited. Certain Christian philosophers and most Eastern mysticism subscribe to the belief that the infinite alone is good, and that life in all its manifestations, as the breaking up of basic unity, must be evil. This conclusion is illogical, for, although without the principle of limitation which is evil, the phenomenal world could not exist as such, its positive aspects are nevertheless existential only in so far as they are symbols of the infinite and thus must be

predominantly good. It is a fact that what we know as the good is only possible because of what we know as evil; for basically the good is itself but one aspect of infinite value and is therefore itself a limitation. The infinitely valuable, to which religion points as the only good, cannot be said to be good *in esse*, because the infinitely valuable is for ever beyond cognition and therefore beyond the ascription of any finite qualities. Nevertheless, evil is but a limitation on the *affirmation* of the infinite.

Evil and temporality are closely related; this does not mean that time is evil. Time is the judgment of value; thus what is temporal cannot be valuable because its temporality is the expression of that limitation. In common usage this idea is taken for granted; one says, "I have no time for him," meaning, I do not consider him important. What are definitely present as sense objects can thus never be by themselves of much value. To attempt to make them so is the attempt to shut off or limit their true symbolism, and consequently is evil. To hold on to the sensory moment for its own sake in the attempt to make it as a moment of more value than it can be is evil, because it is the attempt to make the hardly valuable permanent. The world of matter, nearly neutral to value on its proper plane, is evil and despised when made important. In actual practice the utility of material things (their value) scarcely compensates for the necessary obtrusion of those things when they are not being used. By ordinary they are "brute" things, "in the way," "necessary evils," etc.

The sensualist who occupies himself with the flesh is not evil in so far as he sees in the flesh the symbol of glowing life; but he is evil should he try to hold the flesh valuable for its own sake. The amorist, Casanova, saw in sexual adventure an affirmation; he was never concerned with a woman's body merely as a body, nor merely with the sex act itself; but sex was to him a symbol of goodness, the great desirability of all affirmative things. On the other hand, as John Cowper Powys has ably pointed out, the characters in Poe's stories are evil.

because they tried to preserve the bodies of their women, since they were preoccupied with the flesh as simply flesh, though no immoral act or thought is ever expressed. In Poe's tales and poems the women, like Ligeia and Annabel Lee, die and their bodies are cherished, so that their lovers may not be troubled with anything but the flesh itself. Poe's characters instinctively seem evil because they try to make the tangibility of flesh its most valuable attribute, to make permanent what time refuses to preserve, to invest the hardly valuable with enormous value, to consider a thing as retaining in itself value, and thus to deny its symbolic truth

Contrasted with this shuddering evil is the pitiful and absurd attempt of Huysmans in *La Bas* to make the Black Mass an evil affair. He employs all the conventional symbols of evil: sacrilege, anathema, and excrement, but evil steadily refuses to be invoked; the only end result is the mildest feeling of disgust. This failure comes about because no things will remain definite symbols on all occasions. Excrement, for instance, is of itself neutral to value, and will no more bear an investiture of evil than it will of good. Neither is the same word always truly anathema.

The relative value of all tangible and visible things is well illustrated by Goethe, when Faust is shown the good things of the world and is properly delighted with them, but is unable to say to any, "Stay, thou art so fair."

To endeavour to make the good things of the world stay, results in the things remaining but the good departing. That is to say, the most limited values are kept, but the others elude the effort to retain them. This is what happens when a legitimately pleasurable act is indefinitely repeated: it becomes a vice because the act is made valuable for its own sake, and its symbolism is trimmed down until finally it disappears altogether; and all that is left is habit, from which, perhaps, even the discrete pleasures have departed. Vice makes its own little limbo; it is private, stuffy, an empty thing *in vacuo*, and consequently evil.

In what way is selfishness a vice? Discussions of selfishness and altruism generally get nowhere because it is always pointed out that even the best and seemingly most altruistic act is committed because the actor thereby satisfied a selfish desire. From the logical point of view every act is selfish, by which is meant only that the subject-object relation is involved. The selfishness which is vicious and evil is obviously that act which overestimates the importance of the discrete self. We have said that the discrete self is an utter fiction perpetuated by whatever values may be clustered about it. Thus any act which is performed as though the discrete self were a more important and positive consideration than higher values more external to it, is mistaking the less true for the more true, the less symbolic for the more symbolic, and therefore the worse for the better. A man like St. Francis of Assisi, who gathered all things into himself and spread himself over all things, is logically selfish, if you please, but such selfishness, if it may be called selfishness, is exactly opposed to vicious selfishness. Evil selfishness must be concerned with the self as self; and the more the self can succeed in a consideration of the self as self, the more it tends to concentrate on a nothingness. It may be easily seen, then, why vice "eats the heart out of a man." If the self is but a fictional point around which values are clustered, the more the self cuts down those values, the more it delimits its own reach; and the result is an approach toward nihilism.

Corollary to selfishness is the vice of sentimentality. For here the attempt is made to have discrete things retain significance longer than they can retain it. It is the supposition that a thing which in one context or on an occasion held or symbolized high values, owns those values and can retain them in another context or long after the occasion. Thus sentimentality attempts to make the less valuable more valuable. A typical piece of sentimentality would be: A widower, whose wife had for long years occupied one chair at the dinner table, continues after her death to have her place laid before that

chair, and will not allow anyone else to occupy it. The man is endowing a place at a table with all the significance of his love. This is bad symbolism, for a chair at a table as a discrete thing is without much significance. While she lived, it would have been a matter of indifference to the man or to his wife whether she sat at that place or another; but after her death he would not have her change her chair. All sentiment is not necessarily bad; good sentiment is the symbolism which is not tied down to a discrete object for ever. Sentimentality will generally effect its own solution; the thing on which so much emphasis had been put becomes a habit, with the result that all its meaning evaporates and the sentimentalist is left embracing a valueless thing, an approach, again, to nihility. The widower ends by regarding the empty chair with the place laid by it no longer as a symbol of his love for his dead wife, but only as the way his table is set.

Sentiment may be considered both pathetic (in the common use of the word) and ridiculous. All men participate in the pathetic attempt to hold on to the acute, to catch and hold significance on the wing; yet all men can see, in perspective, the shallowness and ludicrousness of a thing held on to as valuable from which nearly all value has departed. But the discussion of pathos and humour verges on the question of aesthetics; and this will be dealt with in another section.

We may conclude, in our discussion of ethics, that those who say that the good is the more desirable may be sustained in their contention, provided they will admit that all desire searches for a certain object only and is not a random and arbitrary affair. The point we wish to emphasize is that the object of desire is the good, a phase of the quest for the infinitely valuable—that very phase which can be most truly called intrinsically appetitive. Thus the good is the objective name for appetition, and appetition the subjective name for the good. This means that the object of desire is value, the good being but one symbolic finite side of value. It further

means that desire can and must be trusted, since it will always select or prefer the valuable. It must be here understood, however, that desire is not synonymous with the proximately pleasurable; on the more discrete plane the proximately desired is pleasurable; on the higher or less discrete plane the desired seldom appears as pleasurable. Therefore what may seem irrational and emotional is in the long run the most rational, the most coldly logical. For fulfilment of appetite will lead to a certain measure of pleasure on the one hand, a certain measure of practicality on the other. This does not mean that reason is not to be trusted, it means that appetite is to be trusted only because reason proves it to be trustworthy. In our conception of the purpose of ethics, ethics supplies a rational background whereby the affective good can be reduced to truth, and so to a deliberate rational justification, without which appetite flounders and stumbles blindly. The understanding of evil as the principle of limitation makes our ethical criterion plain. Whatever tends to make of a thing a brute limited fact and keep it so is evil, whatever tends to make use of a thing as a symbol is good. The import of our ethics might be expressed in the saying that "the letter killeth; but the spirit giveth life." In other words, what is literal or discrete or brute is evil, temporal, false; whereas what is symbolic or meaningful or related, is good, permanent, true. All things are known only because they present both aspects.

IV. ART AND THE BEAUTIFUL

We have said that art is the uncertain equilibrium between discreteness and significance. In the face of limitations this is the form taken by the quest of significance with which all human living is concerned. Art covers all doing, all making, all thinking. We have said that the discrete is by nature opposed to the significant, the acute to the suffused, the importunate to the important, the tangible to the desired, the present to the permanent. Art strives, and in a certain measure succeeds, in doing the impossible, in reconciling these opposites. It

endows the discrete with significance; it suffuses the acute with values; it shows wherein the importunate may be important; it makes the desired tangible; it renders the temporary permanent. It also makes the imaginative historical, the fragmentary whole, and the evil good. That is, it accomplishes these things to a certain degree and at a certain cost. In order to understand the artistic creation, it is necessary to remember that art is the process by which all things as we know them are made; things, however, are not created *ex nihilo* but out of materials which are themselves works of art. We have said that the material world of common experience, for instance, is a work of art, the endowing of the tangible (itself a fundamental work of art) with greater significance. Up through the series, from the tangible to the furthest reaches of human imagination, we see the same process at work—the making significant in a greater synthesis what is discrete in a less. But if the world of matter is a work of art, the explanations put forward to account for the world of matter are as well works of art: legends.

How and to what degree does art accomplish its purpose? There are several stages in the making of a work of art. It starts with the contemplation of the given material, whether random facts or things. Then there is (1) a sudden arrangement of this data into an organic whole in which the random brute material is meaningful in respect to the synthesis, though the synthesis itself is by itself brute. This process is variously called induction, inspiration, intuition, etc. It is at bottom totally mysterious, but not, we believe, finally irrational. The next stage is (2) the setting by the artist of his new conception against what he accepts as true. This testing may be deductive analysis, the empirical test, etc. This stage is rational, and it is here that he polishes off and “fills in” what he has conceived, giving it body and making it sensible, in clay, print, sound, etc.¹⁶ This constitutes the first step toward socialization; but

¹⁶ (1) and (2) are not always clearly divisible and defined. The rational is constantly reinforcing the intuitive and *vice versa*.

as a work of art it is not yet complete. It becomes complete (3) as a work of art only when it is made public and social, so that it can be fitted in with what is already accepted by some people, though not by all at the time. The last stage (4) is its complete socialization, its general acceptance by all mankind. At that stage it is no longer viewed as art nor appreciated as beautiful; its beauty has given way to its usefulness, and it becomes in a sense independent and a brute fact which, when not useful, is in the way. On our view matter is simply a work of art which has long passed through all four stages. As such it is again "material" for new works of art.

Art is the making of things or symbols, which, though themselves fictional, yet make of those fictional things which they bind together things non-fictional in relation to the whole synthesis. Such a synthesis may in turn be part of a larger synthesis wherein it becomes in relation to the larger synthesis non-fictional, and so on in an indefinite series. Thus to the extent that any work of art whatsoever renders its material related to a whole and so provisionally true and meaningful, to that extent the work of art is valuable.

We have also called art the attempt to save meanings against time. This is only another way of saying that art is the attempt to make the present permanent, the acute suffused while retaining as much as possible of its acuity. The partial success of art is paralleled in memory which effects a compromise, in that a thing remembered is both present and absent. As a symbol it is present; as a meaning (the thing symbolized) it is absent. Obviously a compromise has been effected, a compromise which consists of a lessening of acuity and an increase of suffusion. In the process tangibility has been exchanged for greater meaning, or accuracy of details for greater integral accuracy. This process is precisely comparable to the artistic process. The memory image of the face of a man is not the image of all the details of that face, but only of selected expression or outline. This bare and meagre image is just exactly what carries the significance of that face; and so nothing else.

is selected. Similarly with a work of art, a fine portrait is a comparable selection of only those particulars of a face which carry the more important meaning of that face; and so no other particulars are introduced.

There is another way in which memory and art exhibit the same nature. All completed art is social; that is, no work can be considered a work of art until it is given historical identity. A private piece of imagination is not a completed work of art, since it cannot be agreed upon until it is expressed in some outward and sensible form, given body, attached to something believed in, socialized. An image, again, may not be referred to as a memory of the past, unless there be the conviction that it refers to an historical identity. For the proof of the validity of a work of art, some social concurrence is essential; for the proof of the validity of a memory, some social concurrence again is essential. Thus each artist desires to put into the world, i.e. to socialize, his conception; and each man looks to the other for factual authentication. We see that art serves the same purpose as time, in that in both identity succeeds in attaching to the more significant instead of the less.

Imagination, which is all that can be known of what we call the future (all possibilities not given factual authenticity), plays the same part in both art and the past. In both a memory image and a work of art something is made different from the original datum; for both art and the past are imaginative. In both the memory image of a face, and in a portrait, something is added to the original face.

But the value of the past lies not in its historical authenticity but in its meaning for the present. The amount of historical authenticity involved does not matter; and the distinction between myth and fact disappears as soon as less important particulars lose force or are forgotten. Whether the blind Homer begged his bread through seven cities or not, as a fact has relatively little importance; as a legend its value would not be heightened if such a detail could be authenticated. The great figures, indifferently in myth or history, become

legends: Socrates, Samson, Washington, Ulysses. Since practically all of the past which lies beyond the affecting of tangible relations in the present is made up of just such legends, it may be seen how the past itself becomes a work of art by the falling away of unimportant particulars and the emergence of important meanings. To ask if this created past be untrue, is to fail to see that the important values are atemporal, and truer than an insignificant account in terms of endless and meaningless details. In this sense the truths of art are truer than the truths of common experience, because common experience sees but the discrete fictional means, and moreover sees them as ends—facts, and not symbols; whereas art uses quasi-ends as means, and purposely leaves out such facts as are superfluous to its remoter ends. Whether we look at art or the past, we see the same attempt toward the greater integration of lesser integrations. Thus art succeeds in broadening the present by working over the given material of the past with the imagination of not yet socialized possibilities, which it thereby to some degree socializes and makes present and historical.

If art can make the mythical more true than the historical, it can also make the evil good. Nothing is evil except in a limited context; and in the view of the beautiful, which is a larger comprehension, the evil is seen merely as limitation. In great art, the horrible and the evil are often the subject-matter; yet the effect is neither evil nor horrible, but beautiful.

But the magic of art is limited, it must not be thought that art can completely accomplish the reduction of evil, temporality, and the discrete. Art has its melancholy limitations; it is always a compromise; it can never make the remote tangible, the absent acutely here-now. The "passionate desire to take a bite out of the now" is just what cannot be satisfied. The beautiful may not be touched nor owned, but may be had only by not being acquired. Art can make pain pleasurable, but not less painful; it can make the tragic sublime, but not less tragic; it can make the fleeting stay only by allowing it to flee. Heine

relates how, sick and exhausted, he wandered into the Louvre and fell down at the feet of the Venus de Milo, and looking to her for aid he saw that she had no arms to lift him up. Thus the integration effected by art is only complete on the plane of the beautiful; and on this plane it passes over and seems to ignore all personal eventualities both great and small. Art has been called the dance over graves because it feeds on tragedy, and from the homely point of view seems cruel; yet the purpose of art is not cruel but the reverse, for the beautiful heals in the only way it can, by offering the individual, above his own petty circle of desire for goods, a contemplation of things *sub specie aeternitatis*.

We have partly answered the question of the utility of art. All arguments as to the usefulness or uselessness of art identify art exclusively with the beautiful. Art has to do not only with the beautiful, but also with the good and the true. There are many ways of considering works of art; and the artistic process is not deliberately concerned with any. All works of art are useful in some sense, and so are good. But from the plane of the beautiful the narrowly useful value cannot be seen. A teaspoon, for instance, is a narrowly useful object, irrespective of whether it be considered beautiful or ugly; it is good if it is serviceable. Yet if it be ugly, graceless, it will in time become disagreeable, somehow inappropriate, and therefore bad. If this view of the teaspoon is reached, it has in a larger sense become to the user less useful, though its potentiality for common use remains unchanged. A work of art like *Don Quixote* has its good or useful side, this particular book having been instrumental in obliterating the last vestiges of an outworn chivalry. This useful effect has nothing whatever to do with *Don Quixote* on the plane of the beautiful, where its burden has been just the opposite: the grand pitifulness of all ideal human endeavour. But this effect, too, is ultimately a useful thing. On the other hand, such a work of art as *Uncle Tom's Cabin* was narrowly useful at one period, but has little standing on the plane of the beautiful. Certainly we must

admit that the beautiful is the highest value that a work of art can hold, and that ultimately the good and the beautiful are but two aspects of infinite value; nevertheless, to identify them on any but the highest plane is to create a disastrous confusion of values.

An example of how the beautiful and the good are sometimes unfortunately confused may be taken from contemporary thought. Theoretical scientists, like Einstein and Heisenberg, look on their work as purely aesthetic and "useless"; the common man regards all scientific achievement as being good because it serves technology; but he regards technology as beautiful and *consequently* good. According to the scientists' evaluation, science would serve no useful purpose except to the scientist; according to the common man's evaluation, technology can do no wrong as long as it is efficient. Neither of these understands that a work of art must be beautiful *in order* to be a good. In regard to theoretical science, each grasps but a half truth. In regard to technology, common man fails to understand what he saw so well in the case of theoretical science; and so he not only admires poison gas as much as typhoid antitoxin, but apparently goes on producing both indiscriminately.

Furthermore, there has been an attempt in recent times to formulate an aesthetic ethics, whereby actions may be judged right or wrong by their beauty or lack of beauty. This is a dreadfully erroneous conception, for on the plane of the beautiful all actions may be justified, even the most horrible crimes. Again, we wish to state that the good may be *appreciated* as the beautiful, but that the good and the beautiful are not one and the same. Virtue may be, as Francis Hutcheson said, a lovely form; but then so is a battleship.

The theory that art is an excrescence, "art for art's sake," we have already refuted; we only need point out here that a work of art held valuable for its own sake loses its meaning and grandeur in direct ratio to its devotees' absorption in it as a discrete thing. Another theory, and one more prevalent to-

day, is that of art as an "escape from life." This theory would make it difficult to define life, if not impossible; for the whole cognitive scheme, the discrete world and the ways it is put together, are works of art. Life itself may be described as a continual effort to escape from old and outworn syntheses or creations to newer and less limited syntheses or creations, or in other words, from one work of art to another. It is only the pseudo-scientific conception of life as the mere clinging on to a mere existence that has to explain all things not directly furthering this conception as "escapes." But if mere existence is life, there is no distinction between the life of a man and the life of a jellyfish, except that man tends to run further away from it. To cut out all art from life would be to leave not even mere existence. The basic fictions of life—time and space—are artistic creations; and life itself may be termed the constant attempt to *escape* limitations, to exchange one prison for another and larger.

Although art is not exclusively concerned with the beautiful, beauty is its most evident and affective value; and it is to an understanding of the beautiful that we must turn for a fuller comprehension of the forms of final causation.

The beautiful is a higher and more inclusive value than the good. It is thus more ineffable, more remote and colder, and perhaps more awesome. In a limited sense it cannot be said to be desirable, that is, it cannot be assimilated with the self; it is longed for with regret; and thus an element of sadness and melancholy is always associated with the beautiful, due to the fact that it must remain apart from the self. The beautiful stands between the good and the infinitely valuable; and it is therefore wholly good and partly worshipful. The beautiful may not be touched, but may be glimpsed; it is eternal and unattainable in its essence. Thus to talk about ideal beauty is to use an abstraction which has meaning only as qualifying finite things. The beautiful is presented as an affect.

But how shall the beautiful be described in rational terms?

The beautiful is that aspect of the appetite toward the infinite which is satisfied by the most complete possible integration of objective things, for the simple joy of the integration. If the good fattens the self with values, the beautiful fattens the object with values.

The beautiful is felt to be perfect and exact balance, a harmony which can never be achieved by deliberate rational procedure; the balance is discovered through symbolism. This balance is always the least discreteness, the least *material*, combined with the greatest significance that it can carry. Thus the beautiful is what makes the brute, the discrete, as meaningful on a certain plane as it deserves, it gives it exactly as much weight as it will hold on that plane and no more, but always by lifting it out of its discrete context. The beautiful is, then, seen to be rationally reducible to the just and the efficient. It is only by the analysis of the affective beautiful that one can recognize and apprehend the beautiful as the just, since it expresses its equilibrium symbolically. It is suggestive that the word *fair* means both *beautiful* and *equitable*. In the obvious symbolisms of art it is easily seen that the beautiful corresponds to the just or the efficient. The beauty of a boxer or an athlete in action is the economy of effort with which he accomplishes his purpose. It has been proved time and again that the most graceful movements of a labourer are the most efficient; the Venetian gondolier and the good machine are both beautiful for the same reason: their admirable employment of only sufficient energy. Finally, the beautiful, like justice, is blind, since it is only concerned with the balance for its own sake, and not with individual desires or goods.

The ugly, like evil, is purely negative. It is what lacks beauty, balance, and justice; it is the fragmentary, the unharmonious, the brute. Thus, in the final analysis, it is the untrue. The ugly often seems positive but never is; it seems positive because it is the sudden and violent disruption of the balance and harmony of the beautiful; one is shocked by the inappropriate, the unbalanced, the inefficient. Ideal ugliness can never be

good; but a thing judged ugly may become good. In fact, the word, homely, expresses this idea, since it means something to which one is so well accustomed that it is neutral to beauty and is good. Indeed, the beautiful would be impossible to live with; it is too austere and imperial, too impersonal.

V. AESTHETICS

Aesthetics is the rational reduction of the beautiful to the true through an analysis of the symbolism of art. The beautiful is not presented affectively as the true or the just, but as beautiful. Indeed, the beautiful cannot be plainly seen as true and just, except in works of art other than the fine arts. A keen knife blade may be considered either as true or beautiful; but the paintings of El Greco, for instance, are not so obviously true and just; on the contrary, they are decidedly lacking in verisimilitude. In the higher reaches of the beautiful, truth and justice are not apparent, and can only be understood through symbolism. The deliberate rational attempt to make things just results in a beauty which is beauty by the merest—a kind of forced symmetry. Thus under no circumstances can a theory of aesthetics instruct the artist how to create. Nor can aesthetics determine an affective judgment of the beautiful; it can only deliberately analyse such a judgment, and, by reducing it to the true, reinforce intuitive appreciation. Aesthetics, like ethics, is always *a posteriori*. A line drawn by a great draughtsman like Giotto is felt to be beautiful; and it is only by the most careful analysis of what this line is meant to convey that one is brought to the judgment that it is the most *efficient* line. It is the symbolism, the meaning, of every part of a work of art, and of the work of art as a whole, which must be understood before one can presume to make a judgment as to its explicit aesthetic merit. This is a most difficult task, the tendency being always to go to a work of art with pre-conceived ideas. Schopenhauer understood this; he says somewhere that when you approach a work of art you must not speak until the work of art speaks first.

The aesthetic criterion is the measure of the *symbolic* inclusion in a thing of the greatest justice. By justice we mean perfect, balance, efficiency, harmony, since a work of art is the balance between material and meaning. By the material of a work of art we mean whatever is accepted as given; for instance, not only the paint and the canvas, the paper and the typewriter, but also certain accepted symbols, such as Roman letters, which it is agreed stand for words, and words which it is agreed stand for certain ideas, or, in painting, certain designs which it is agreed stand for certain things. If the painting is a formal design, its lines or masses are conventions and therefore materials. The meaning of a work of art is the relation of these accepted conventions to the conception as a whole. In Poe's poem *The Conqueror Worm*, which begins

"Lo! 'tis a gala night
Within the lonesome latter years!"

we have the slow movement of the lines, accentuated by alliteration, the use of the word *lo* to yield a certain suspense, the ironic use of *gala*, the only word expressing gaiety which does not sound gay, the explicit meaning of *lonesome*, the implicit melancholy in the sound of *latter years*, etc. All these have a bearing toward the meaning of the whole, though each by itself is but a conventional thing. The material must be just sufficient to carry the whole meaning, if the work of art be good art and beautiful. If this balance is not maintained, the work of art is bad to that degree, and hence not beautiful. There are two ways in which a work of art may be unbalanced. (A) If it has too much material, that is, any material which does not bear toward the whole, it is heavy; (B) if it does not have enough material, that is, if its material does not sufficiently sustain the whole, then the conception exceeds the work and the work is light. A good work of art must float between the turbid seas of literalness and the atmosphere of meaning. From another attitude, (A') if the parts bear too much significance for the whole, the whole is not large enough,

and the work is again heavy; (*B'*) if the parts do not sufficiently support the whole, the whole is too large and the work is again light. An example of (*A*) would be Theodore Dreiser at his most verbose; an example of (*B*) would be *The Marriage of Heaven and Hell* by Blake for its incoherence; an example of (*A'*) would be any novel by Dickens for its bathos; an example of (*B'*) would be *Les Misérables* by Hugo for its rodomontade. In (*A*) we have a work of art which is dull and tiresome, and seems to be nearly pointless. The reaction to it is boredom. In (*B*) we have a work which is difficult to comprehend as a unity; it is obscure and does not hang together. The reaction is bafflement. In (*A'*) we have a work which is temporarily and partially exciting but which is anti-climactic. The reaction is disappointed expectation. In (*B'*) we have a work which is all fustian, much ado about nothing. The reaction is the most superficial amusement and eventual ennui.

Within the grand synthesis of every work of art there are numerous parts or minor syntheses which are themselves works of art. For instance, in *King Lear*, the scenes are integral parts of the drama; yet by themselves they constitute separate works of art. The speeches within the scenes, the lines within the speeches, and the phrases and images within the lines, are in turn works of art. If in a work of art the grand synthesis is weak and the lesser syntheses strong in themselves, but weak in support of the whole, so that the interest centres on the details rather than their total effect, the work is called decadent, rococo, baroque. If the grand synthesis is strong and the lesser syntheses weak in themselves but strong in support of the whole, so that the interest centres not on the details but on their total effect, the work is called chaste, austere, classic.

Again we must call attention to the fact that by no deliberate method can the balance of a work of art be established. One cannot rationally arrive at the amount of meaning part of a work of art can bear to the whole, nor what whole need be

created to exactly include a certain set of meanings. All such attempts are forced art, trivial or specious or clumsy.

So far we have discussed the work of art considered *in vacuo* in order to determine wherein its beauty could be reduced to balance and harmony. We have made no mention of the relation that a work of art bears to other things. The beauty of a work of art depends upon the balance maintained by its interior relations, irrespective of the grandeur or triviality of the conception. The symphonies of Beethoven are beautiful, but so are the waltzes of Johann Strauss, because each is in its conception balanced and adequate. The *greatness* of a work of art depends upon the inclusiveness of the conception, upon the grandeur of its ambition. It depends upon how many broken things it can symbolize as one, upon the atemporality of its treatment of temporal things, upon its ability to embrace the limited and the evil and exhibit them within its synthesis as good. Great art has no more intensive beauty than minor art, but gives beauty greater scope; and thus the effect is one of grander beauty. From the narrowly aesthetic point of view an intaglio may be as beautiful as the *Iliad*, or perhaps the intaglio may be more beautiful because it may be a more perfect thing. But in a broader sense the intaglio is not as useful as the *Iliad*; and by this broader usefulness we do not mean whatever direct moral lesson might be drawn from the *Iliad*, nor whatever historical import it might have; but its heroic scope is a useful thing, for it is able to lift one above the proximate good and evil on to a plane where things may be good *because* they are removed from proximate good and evil.

For the reason that the fine arts are more ambitious in achieving greater beauty and do more than does a flower, for instance, to remove one to the plane of the beautiful by eliminating all that is extraneous to that plane, they are known as the fine arts. In appreciating the beauty of a rose, a tree, or a mountain scene, a man must, so to speak, be his own artist and cancel out all countervailing values, whereas in

viewing a work of fine art this effort has been made for him. The fine arts may be loosely divided into the temporal group, which includes music, dancing, poetry, and the spatial group, which includes painting, sculpture, architecture. The temporal group broadens the moment by relating each part to the whole, so that each moment refers backward to the past; and thus the past is again made present and the fleeting held. The spatial arts arrest movement and freeze the moment, but broaden that moment by making it significant of what refers beyond. Both the temporal and the spatial arts accomplish the same purpose but by different means; they thicken the instant: the temporal arts by drawing a quasi-spatial pattern in time, the spatial arts by drawing a quasi-temporal pattern in space.

Both the temporal and the spatial arts are imaginative in that what they present is a synthesis which has never before been presented. The arts refer forward into the future as well as backward into the past. The fine arts deal with possibilities of the future by using counters of the past, arranging them in fresh relations, and so realizing what would not otherwise be realized. This is the primary function of art: the making actual what was before only potential—the making social what would have otherwise been either personal or non-existent in any human sense. And thus art makes what was evil and broken into something good and beautiful, by originating a new and broader whole which had never before been a fact.

Thus to a degree all great art must be romantic, if by romantic it be understood that art presents common experience not as it is known but as it ought to be. Romantic art is idealistic; it is concerned with ideals which common experience seldom or never achieves. When these ideals are the grand ideals of humanity—the utterly unattainable—the result is high romance; and in this sense classic art may be called high romance. But when romance concerns itself with the more attainable ideals it ceases to be great art though it may still be good art. All romantic art, however, is seemingly uncon-

nected with common experience; it makes no compromise with the discrete world of the wayfaring man. After contemplating romantic art, no connection is seen between its lofty plane and the raggedness of life. Romance thus appears superficially as an escape, and romantic art as what Freudians like to call "wish fulfilment." Yet this is the very essence of art, although in the case of romantic art an impassable gulf seemingly gapes between what is and what is felt ought to be. A certain type of romance, the trifling romances which represent all proximate desires as fulfilled: the desire of the plain girl to marry a prince, the desire of the poor and weak man to be rich and powerful, these may be described with some point as escapes; for, if taken seriously, they are narcotic. But here again the aesthetic appreciation is unerring; for such subjects heavily treated are not beautiful, whereas if lightly treated in direct proportion to the triviality of their ideals they are beautiful and cannot possibly be taken for anything but pleasant tales.

Naturalistic art has as its professed aim the exact opposite of romantic art. It desires to set forth experience as it appears, and not as it ought to be. The naturalistic programme is to present the data of experience without prejudice or selection, either for the mere sake of representation, or in order to allow the data of experience to yield their own meaning, if any. This ideal is the familiar empirical one, not as it has been put into practice, but as it was conceived by Francis Bacon. It is obviously an impossible aim, because no artist can represent all aspects of a segment of experience. What, for instance, would be the reality of an apple? Such a description would have to include the physical, the biological, the psychological, the economic, etc., *ad infinitum*. If this kind of description were possible it would consist of an endless inventory which would not even yield a picture of the apple. So a selection is always made, which in turn implies some particular attitude on the part of the artist. When a number of such ordinarily insignificant details are stressed in a work of art, the effect

revolting and horrible. Baudelaire wrote of rotting corpses, Sophocles of incest, Dostoyevsky of murder; El Greco, Degas, Rembrandt, Goya, painted the macabre, the ugly, and the distorted. The more cruel, the more desperate the subject matter of art, the greater the ambition of the artist to affirm through the worst that all life is beautiful and on that plane good.

Any work of art, even the simplest, is an extremely complex affair, because the artist puts into it so much intended, so much unintended; and, moreover, the work of art acquires values independent of the artist. Leonardo's *Last Supper* has, beside the intrinsic qualities, such as the composition, the movement, the lines, etc., extrinsic qualities which include not only the illustrative quality but also the historical, literary values, which cluster around a work of art to the detriment of its formal qualities. Another work by Leonardo, the *Mona Lisa*, has become so encrusted with extrinsic qualities that one can no longer see it as a painting. Intrinsic and extrinsic qualities should be carefully distinguished; the lack of such distinction leads to much confusion in art criticism. Form and material are intrinsic qualities; but all art has extrinsic qualities. Most people do not understand or look for intrinsic qualities but dwell on the extrinsic, whereas aesthetes proclaim that only the most intrinsic qualities are worthy of attention. Both these absolute attitudes are mistaken; the illustrative quality of a painting, for instance, is of permanent value only in so far as it is carried by the whole formal conception; otherwise, it merely tells a story which could have been better told in words. On the other hand, no matter how perfect the formal qualities of a painting are, if they do not support some grand conception, the painting may be good and beautiful in itself, but can never be great art. It is this quality of greatness in art which the aesthete who worships the beautiful overlooks, thus making of the beautiful an idolatry, and a brute affair which seems to have no relation whatever to human life.

- The beautiful is an unstable category; it tends to slide into

the good on the one side, and the worshipful on the other. Should it slide toward the good, its purpose as a work of art is completed; and it becomes useful, but at the same time loses its beauty. Should the beautiful become the worshipful, the purpose of the work of art is thwarted, for it is set up as a finite object of worship, and consequently a slavish idolatry; it loses its grandeur though it may keep its beauty.

Pathos, as we have observed, is involved in the fact that the acute is temporal and cannot be made significant; the attempt to make it so is sentimentality. In aesthetics, this shows itself as the morbid or harrowing or the sickeningly sweet, the putting of too much stress on the wrong things. Pretty art is bad art, not because it is trivial but because it takes too solemnly trivial things. The symbolism of the pretty is a shallow and obvious symbolism because it represents insignificant aspects of things; for instance, a pretty picture is one in which the subject-matter is idealized from the point of view of desirability. Into a pretty picture of a bowl of fruit is painted the lusciousness, the edibility of the fruit. Thus the fruit would be represented as full, ripe, and ideally perfect, but all other ideas would be slurred in favour of these, or omitted. Similarly with the study of a woman, the flesh tints are titivated and the curves idealized. In the pretty the appeal is made to the good as good: to possessiveness. When the artist deliberately attempts to write or paint beautifully beautiful things, the result is always the pretty. This is an impotence of creativeness, because the artist is not creating a new thing but merely rearranging old ones. To write beautifully about beautiful things is like consciously doing good deeds or deliberately striving after inductions. One instinctively feels these approaches to be wrong. Beautiful things are themselves works of art, and as such are not fit material for the artist; rather he must concern himself with things which are not obviously beautiful. The artist who deals only with the beautiful ends with the pretty, and so is not truly an artist but merely one who repeats the common aesthetic judgment

of his time. Thus Bougereau, Oscar Wilde, R. L. Stevenson, were acclaimed in their own time, but are fast losing their popularity.

In its greatest reaches art is tragic or comic, generally both. Tragedy consists in the lifting up of the broken, the evil, the unfortunate, to a plane where they are shown to be justifiable, where the defeated is made triumphant. In all proper tragedy the hero must be a hero in the truest sense; he must win though he loses, for there must always be some affirmation of victory higher than the personal. "I play not a march for victors only. I play great marches for conquered and slain persons," says Whitman. Essentially all art is tragic: the abandonment of the proximate good in favour of the just, though that justice be not understood. The effect of tragedy on the spectator seemed to Aristotle to be purgation through pity and terror; but it is rather that pity and terror themselves are purged of their evil meaning, and on the plane of the beautiful are seen to be somehow just.

In comedy the reverse method obtains for the same purpose: the broken, the unfortunate, the evil, are exaggerated to the point where they lose their pathetic value. Thus an equilibrium is again restored; and the fact that the acute is not important is exhibited for all to see. Personal misfortunes are laughed away as unimportant; and again the justice of all things in their proper order is affirmed. The comic spirit is thus invoked wherever there is a discrepancy between evaluation and value. Whatever does not balance is funny. Practical jokes, such as removing a chair when a man is about to sit down, evoke laughter, because the man is trying seriously to do something which the spectators know is impossible under the circumstances. All incongruities are funny, such as the marriage of a tall thin man to a short fat woman. These are humour on its lowest plane; but in all humour cruelty is involved and tragic subjects. Death, unrequited love, and failure of all sorts, are humour's favourite subject-matter.

• It is a mistake invariably to connect comedy with laughter.

The pathos of important things is too ironical to be laughed at. But at the other extreme nonsense may not seem to be pathetic at all, or even satirical; for here what is being ridiculed is the tendency of all persons to take concepts too seriously. The existence of nonsense is a grand warning that even the greatest rational syntheses are largely fictional, and neither final nor sacrosanct. In nonsense, reason itself is the butt of the jest.

The highest flights of tragic art can never be far from comedy. What is more tragic than King Lear accompanied by the fool on the heath, yet what is at the same time more ironic? And with a slight shift in emphasis, what would be funnier? What is funnier than the adventures of Don Quixote? But the tragic aspect has been the one most insisted upon.

The beautiful is at once both cruel and kind: cruel, in that it demands that one leave behind all personal considerations and admire destiny; kind, in that it shows that failure in the experiential world may still be converted into some sort of personal triumph. Thus in the long run and ideally the beautiful may be seen as the good, and as being, next to the worshipful, the highest aspect of infinite value. The beautiful by itself is an irrational affair, and thus an aesthetics concerned only with the beautiful would be merely diversion. For the beautiful is only understandable in terms of something else: the good and the worshipful. It is the value which reflects infinite value on to things so that they may be later assimilated to the self; it integrates the non-self for the self.

VI. RELIGION AND INFINITE VALUE

The worshipful, as the highest finite value, includes the good and the beautiful. Worship is that aspect of the appetite toward infinite value which would merge the self with all else; it is therefore the attempt to reach the most complete integration. In worship the self surrenders to that value in the face of which it feels itself to be of no value; in the presence

of the worshipful the individual lays himself open without reservation, and, completely vulnerable, throws himself on the mercy of the highest value. The worshipful is the most evasive of all values, since it must set up a finite object as representing the infinitely valuable. This object of worship may be good, or it may be beautiful, but as the worshipful it can have no value nor be anything save a symbol of infinite value. When it loses this symbolism, it becomes an idol; and thus all symbols of infinite value are in themselves idols which eventually become desiccated and perish. When finite things become vested with infinite value, they lose their goodness as finite things and their grandeur, though they may retain their beauty.

But inasmuch as infinite value remains always beyond, man must continually set up finite things as worshipful and as *symbolic* of infinite value. Although gods grow old and die, there will always be new gods

Nevertheless, worship will not remain tied down to any set symbol. Inasmuch as all things reflect the infinite, all things are worshipful. The essence of religion is this feeling that all things may be worshipped as symbols of infinite value and thus sanctified and forgiven. Thus the religious spirit is not primarily concerned with a set symbolism or a theology; it may or it may not be exhibited within an established religion. The religious spirit is primarily affective, and is not a rational belief, but is the deepest appetite for infinite value that man is capable of sustaining. The religious spirit is again the unreserved acceptance of all things, and not the worship of one set symbol. In what is called mysticism this attitude is made clear. Whether the mystic calls himself a Pagan, a Christian, a Pantheist, or whatever, is an indifferent matter, since he is not looking toward a remote cosmic God, but to something within his experience which affirms life in all its vivid and multifarious aspects. All mystics, no matter what their professed theology, have understood this. Jesus explicitly said, "The Kingdom of God is within you." Buddha and Laotzse

talked no theology; both saw religion as a *way of life*. St. Francis and Jacob Boehme did not question the current theology, though their contemporaries questioned *their* theology. A mystic may never enter a house of worship, but this is a matter of indifference to his mysticism, because in a sense he is never out of one. For God to them when called God is never an abstraction, but the most concrete positive experience.

The question of how seriously the expressed religious experience of the mystics may be regarded as a thing altogether apart from sensory experience, is one concerning which much discussion has taken place. We may accept the stammering attempt of the mystic to report his experience, and yet disregard his interpretation of that experience as being anything supernatural or as more immediate than any other experience. A mystic experience could only be a heightening of common sensory experience, in which the mystic is overpowered by the immanent meaning of things, where the most suffused values are for the moment glimpsed. Thus it cannot differ radically from intense perceptiveness. For instance, the man who is, on entering a room, capable of immediately comprehending the "emotional tone," of "feeling what is in the air," is said to have penetrating insight, but is credited with no supernatural powers. He simply apprehends or perceives the inclusive meaning of the situation. A mystic does not differ in kind from such a percipient; but what overpowers him in his experience is its worshipful aspect. His perception is the most significant possible; and because it is uncommon he lays claim for it to supernatural experience, a claim which it does not need.

Mystics have insisted that in their visions they saw the infinite connectedness of all things, the infinite goodness, the infinite beauty. But if we are correct in our premises, then all feeling of the connectedness of things, the affirmations of life, are, to a less degree, mystic experiences, and so religious. Thus the religious spirit is not confined to unusual experience,

but to some degree permeates all experience. The religious spirit is never negative, and is thus an attest that from the plane of infinite value all things are good, beautiful, and worshipful. Thus the religious spirit is not only beyond good and evil, but beyond the justice of the beautiful. It is no wonder that it has often been felt as an infinite mercy, a hope against impossibility which the future will somehow fulfil. The insistence of this impossible hope is itself an evidence of infinite value. The religious spirit is distinctly the affirmative in all things; it is the element within the good which makes it good, the element within the true which makes it true, although in each it is beset by limitations which prevent it from ever being grasped in its entirety or purity. We would insist again that religion is not anything apart or different from the rest of experience, but that aspect of things which always affirms and never denies. Infinite value is the whole truth toward which we reach but which can never be known. It is the impossible ideal which is awaiting realization and yet is immanent in all things. It is the ideal good which we desire but which can never be grasped. It is the ideal beauty which we admire in its tentative balance but which can never be contemplated. Yet it is all these things integrally; for within it all values cease to be values, like colourless white light which includes all colours though none is visible. Religion can never finally be held down to any finite thing or creed; it is always thus beyond which man glimpses or feels only in its particularity as the good, the beautiful, and the worshipful.

The very presence of hope in the experiential world accounts for the concept of immortality. Man simply refuses to believe that earthly life is a meaningless affair leading nowhere. It has been our intention throughout this book to show that this conviction is justified; yet we would indeed be presumptuous if we were to state what the purpose of life is beyond its indicated experiential direction. Nor do we believe that any such guesses are of considerable worth. How the fiction

of life arose in all its limitations lies beyond the possible knowledge of man. What it means to end this fiction is again beyond knowledge.

If, however, individual being is but a fictional cut in basic unity, which prohibits man's ever understanding the whole, and limits him to its distorted aspect of subject and object, then certainly when this fiction ceases, when this distortion or tension is relaxed, there can no longer be experience in any understandable sense; and the individual consciousness, which is that tension, must cease to be, and the individual must perforce lapse back into the state of being one with all else, which he had never truly left. To be one with all being is not to be at all in any personal sense. Thus if one takes the personality, or the individual consciousness, to be the supreme good, life must be altogether a meaningless affair. Nevertheless, inasmuch as all men cling to the idea of individual survival, and to some degree detest all thought of personal annihilation, every man's life may be said to be a tragedy in view of his eventual end. Yet it can be a tragedy in the grand manner; for while the individual lives the value of his life may consist in the striving toward what he knows he cannot possibly attain. All the living of a life must be for this world of experience, for the individual while he lives and for those who live after him. It is this way that all great men have lived; and the greatest men have been those who have lived the most this way, who have found their purpose, justification, and happiness, in being used for a purpose beyond them, who have given their lives for the greatest good of future generations, whether consciously or not. They have been willing to lay up an immortality which they themselves could not enjoy.

VII. THEOLOGY

To discuss infinite value from the rational point of view is a dubious undertaking. Infinite value, according to our ontology, is the stuff of the universe, the only non-symbolic, .

non-representational completely positive value. And the first word to be said about it is that nothing positive can be said about it; nothing can be known about it as such, yet all things point toward it, and it is thus, as Whitehead says, "the most concrete fact in the universe." The term, value, is here a misnomer, for value implies a comparison with something higher. God can only be described by saying what He is *not*; and the negative always asserts something else; this is in effect a double negative, which affirms. But such logical procedure yields only the most abstract possible description. The negative approach to God is therefore unsatisfactory, for it speaks abstractly about the most concrete fact. Yet it is the only logical approach, consequently theology is foredoomed to be a barren affair. Rationally God is but a logical postulate.

We have called Him the infinite, or basic unity; but these are mathematical notions, logically illustrative but woefully barren. It would, perhaps, even be better to think of Him as a low undertone of laughter; yet the law of parsimony would seem to preclude any other conception save the mathematical.

The existence of God cannot be proved. Yet without this *ad hoc* theory nothing is rationally demonstrable. He cannot be rationalized because He is the irrational basis of rationality. The most purely logical science, mathematics, calls for a finite number always greater than any finite number, and thus employs an infinite which it necessarily cannot reach if it is to keep the definition of finite number. Again, the mechanist must have a First Cause in the infinite past for his locked chain of cause and effect, a *causa sui*. Aristotle had to have his Prime Mover, Whitehead his Principle of Concretion. The atheist has to have his Blind Chance which must perforce have started with a *certain accident*.

But the difficulty with all these conceptions is that they seem to be entirely foreign to all affective religious experience. These conceptions of God are not worshipful; they are reluctantly

invented because they seem demanded by the logical situation. These Gods are unconcerned with humanity, for, having started the universe off, they were no longer required, and so fell into a deep slumber. As a cosmic God, the Old Gentleman with the long white beard who lives in the sky is preferable to Jeans's Great Mathematician who seems to have cared for nothing except the welfare of differential equations.

Yet no God more acceptable to humanity than the mere term, infinity, can logically be defended. It is here that we reach the critical limitation of compromise. Significance is of all things the least discrete; thus to attempt to make it discrete is immediately to deprive it of all significance. We, as well as all other God-namers, can only gesticulate toward something beyond. Recognizing this dilemma, we shall not be so foolhardy as to attempt to describe a cosmic God. However, we shall examine some of the notions current which do make the attempt.

To-day there are many conceptions of a Supreme Being which have little to do with religion but are theology of a sort, even when they are professedly denying the idea of God. Still the most popular conception of God is that of a real Being, remote, beyond the utmost confines of the physical universe, the Creator who rules and decrees all things. This is the God of the present established religions. It is this God against whom the atheists inveigh, that science fails to find through the microscope or the telescope. So He is out of fashion with all intellectuals, though secretly admired; indeed, it is questionable whether this God will ever go out of fashion altogether.

The God overtly acknowledged by the intellectuals is Blind Chance. Blind Chance is simply the belief that things are what they are because they had to be something. This is an incompletely rationalized notion, for the concept of chance applies only to a restricted field where some factors are known and some unknown. Applied to the universe, chance has no meaning; for if things are what they are and not otherwise, then chance

does not rule the world, but a locked determinism which must logically be assigned to a first cause.

Those who believe in an all pervasive Force are, like those who believe in Chance, applying a concept of limitation to an unrestricted field. Those who identify God with energy, electricity, etc., forget that these concepts are used to describe a tension within a restricted field without which they could have no definition. All pervasive Force negates the definition of force.

There are some who call God the Great Intelligence, Divine Reason which is credited with the design of the universe. This class includes those who call Him the Great Mathematician, the Great Mind, the Great Architect, etc. But we have shown reason to have no existence apart from affection and, moreover, to be a process which works to overcome limitations by setting up new ones; and thus it only asymptotically approaches truth. To call God Reason would be to postulate something beside Him and beyond Him.

Blind Cosmic Will, Pure Appetition, the *Élan Vital*, Love, the *libido*, all of which strain toward some unknown goal, have also been nominated as God by some. But here again is an idea which must presuppose a superior intention; for if the direction is determinate, that direction must have been set by some One greater than cosmic appetition. Without a determinate direction the whole idea of will, appetition, etc., falls. Flux can have no meaning by itself; similarly with *becoming*, to say that a thing "becomes," unless you have some idea of what it is becoming, is a meaningless tautology. Time is, again, but the comparison of the endurance of identities.

But such Gods are unsatisfactory, because they do not explain or satisfy the religious impulse, the immanence of infinite value. These Gods are impotent, malevolent, or else they are practical jokers: the source of evil as well as of good, of pain and ugliness. Perhaps our conception of the infinite seems to be equally vulnerable; and surely if our God be the real cause of human limitation, He is open to the same

criticism of indifference that we have levelled at these other Gods. Again, we do not attempt to explain the cause of, human life, but we have called individual consciousness an utter fiction, by which we mean that a part of the infinite conceives itself as discrete, and to some degree perseveres with this fiction. Thus man necessarily distorts and limits whatever of all else he can comprehend. It logically follows that for this limitation man is responsible; and he is thus the creator of evil.

Established religion constitutes a compromise between theology and mysticism. Every established religion at one time started with a fresh religious or mystic feeling, later elaborated into a ritual which becomes the set symbolism of the worshipful. The religious feeling is at the same time rationalized in a theology which may be nearly indifferent to the original source of its beliefs. As the religion grows older the feeling becomes lost, and the symbol which stood for that feeling becomes merely allegorical, a thing admired for its own sake. At the same time its theology becomes less and less submissive to criticism and change, ending as a dogma, a sacrosanct irrationality. Thus all religions become idolatries, lose their vitality, and eventually die.

This does not mean that the institution of established religion will ever disappear. For the compromise which established religion tries to hold between mysticism and theology is a necessary one. Established religions are needed to set up definite symbols as worshipful, and thus to make free the expression of the worshipful. Such symbols are temples, cathedrals, altars, hymns, images, incense, etc. Religions are necessary also because they give some rational answer to the question of what lies beyond the finite. Thirdly, they are necessary because they give a divine authority to the good, the true, and the beautiful, thus working a hierarchy of values. The best religion is that one which holds to an exalted theological conception of God, while at the same time it remains rich in concrete symbols of the worshipful. Such a .

religion must reach and assign descending evaluations to all experiences, even to the most trivial and commonplace. It must stylize life. Yet if, as to-day, established religions are divorced from the rest of life and are accorded but lip worship, their benefit ceases and they become unnecessary, and even stand in the way of the religious spirit.

Of all things, therefore, religion requires a constant change of religions. No single institution has been as potent a source of evil and slavery as religions which worship the symbols of the worshipful for their own sake, from which all symbolism of infinite value has evaporated and of which only the beauty remains. For the worship of the beautiful is always a slavery, demanding an illimitable and pitiless sacrifice of human goods. The beautiful must stand only as a symbol of infinite value.

Established religions, which at the present time offer such a pitiful spectacle of compromise in the face of the attacks of science, are doomed to extinction or revitalization. Yet some religion is always in force. At all times there are inferior religions which, although not known as religions, exhibit all the phases of established religion. These religions are the worship of the symbols for the highest evaluations of the age in which they spring up. They have their rituals, however unacknowledged as such. To-day, for instance, there is the religion of abstract possession, which sees as its highest evaluation the tangible. Its symbols are money and property generally; its temples are banks, gorgeously appointed, and "skyscrapers." Another current religion is the religion of action for its own sake, which, unable to see any values that can be held on to, deifies action itself. Here the symbols are: faster and faster means of transportation; streamline automobiles, ocean greyhounds, and low wing monoplanes; the temples are stadia, enormous hangars, impressive railroad stations. These popular religions are, of course, tawdry and ephemeral because they endow with value what is of slight importance; and they overlook all that is of most significance. Thus no one in his heart truly believes in them, however

much he may protest. This, however, does not prevent them from being idolatries and from setting up a slavery to which even their cleverest high priests are not exempt.

Our conclusion concerning religion is that mankind requires some established religion in order to give style and freedom to the worshipful. At the same time mankind requires some rational answer to the mystery of infinity. Thus theology is a necessary part of every established religion; and no religion can last very long which runs contrary to reason. Yet for all that, every established religion is a compromise between discrete symbol and its suffused meaning, between the affective worship of infinite value and its rationalization. Pure religious feeling, the worship of all things which affirm, needs no institution in order to exist, but exists more easily within one where it is maintained by a tangible symbolism, set up for that purpose alone. Established religion is dependent upon a precarious balance; its symbolism is, by virtue of being so set, apt to be deserted by its meaning; it then becomes an idol of the beautiful. Moreover, established religion must strive to satisfy the intellect with what is at best a substitution for the infinite, since any finite conception, no matter how grand, can be no more than this. When by some happy accident, for a moment, the rational conception with its symbolism coincides with the immanent appetite of the infinite, then a religion is at its zenith.

VIII. FIRST AND LAST THINGS

Since we have seen that infinite value is made evident only in experience, and is otherwise a logical postulate, we return to the point with which we concluded Chapter I, namely, that human values constitute the only values. To man, infinite value is the ultimate aim and goal, his final causation. Without reference to it, no human experience is understandable. Yet infinite value is by itself but a phrase. So man is the measure of all things, since Entire Man partakes of infinite value, but

only in forms which point to it; and although he orders all values around infinite value or final causation, it always lies beyond the reach of his knowledge.

Man orders values; and evaluation goes on, whether he is completely aware of it or not; but without his rational co-operation, values assert themselves only through a vacillation between extremes of too much attention and too little attention. The importance of the right rational background is that it must conform to and reinforce affective values. Evaluations must be at one with values. The trouble with the contemporary world is that it has moved far from this ideal. The scientific cosmology has seemed to negate values and to have set up discrete physical particulars as basic. This empiricism, logically followed, leads to the notion of an independent world in which Entire Man is a meaningless interloper.

We have denied the validity of this approach, and, starting from an examination of knowledge, have been able to discover no knowable independent world. We have accordingly set up the hypothesis that the world, as it is known, is a creation and fiction of man, not *ex nihilo*, but constructed out of the partial view of the infinite. Thus all things known present two aspects. the limited and the affirmative. With this hypothesis it becomes plain what the empirical world of science is. a concentration on the brute side of phenomena.

This is the abstraction with which physics started, although immediately hypothesis and induction were employed in order to connect random data. Thus pure empiricism was abandoned almost as soon as it was proclaimed. The new physics has made this unmistakably clear, and completed the refutation of this kind of empiricism; for it has shown that even discrete physical particulars, things considered in their most brute aspect, have no proper private qualities: nothing is finally brute, even in its seemingly most intrinsic essentials. This position, as some physicists have seen, requires a drastic reinterpretation of metaphysical notions. We ourselves, however, do not believe that the findings of physics can be used

as an exclusive basis for metaphysics, because physics denies the existence of values, for the very simple reason that value has been deliberately excluded from the abstract physical world. Moreover, it regards causality—the causality of a world again deliberately prepared for causality, by the omission of all that is not universally agreed on—as a philosophical concept. The service of the new physics to philosophy is the negative one of showing that philosophy must return to experience as its only starting-point, to an examination of the unrationalized basis of physics—a deeper analysis of the concept of empiricism.

It is to this abstraction, this empirical world, that we reverted to examine it as experience from the point of view of the knower. We found that a percept is a meaningful synthesis, which presents at once two aspects: the *datum* and the *cognoscendum*, the brute and the meaningful, what is given and what refers beyond. Thus a percept as a meaningful synthesis is both a *datum* and a *cognoscendum*. It should be noted that we make no drastic distinction between perception and reason, perception being the name given to the synthesizing process when the data are sensory, that is to say, considered present, and reason being the name given to the synthesizing process when the data are no longer exclusively sensory and no longer necessarily considered present. Both employ concepts, which are, in their turn, both *data* and *cognoscenda*. In the synthesizing process it is important to note that, although reason and perception deal with discrete identities, they deal with them only as courtesy identities, for when these identities are related to other identities, only their affirmative qualities, their affects, are accorded recognition, and no cognizance is taken of the identities themselves. The positive element with which reason is concerned is, then, affection, without which reason would be impossible; but affection is also by itself merely an abstract term, and what the knower is made aware of are discrete affects. Thus without the synthesizing process, the term, affection, is meaningless. Affects are values; they reflect that something beyond, which

we have termed infinite value, to the knower at once a feeling and a reaching toward an unrealizable goal. Without this appetite there could be no direction of reason; yet without reason appetite would stumble and grope. We repeat: the road that value requires is never seen in its whole stretch, but is plotted with the aid of reason step by step. In the long run, therefore, reason and appetite are not opposed though they often seem to conflict. They seem to conflict whenever a concept is accepted as final; yet a final concept is an irrational thing, and therefore reason itself affirms, by its requisition of something beyond, that it is not supreme. Reason is inexpugnable, but all concepts are heuristic, and should be continually made and unmade; infinite value demands that ideals must be unattainable. For all positive things are positive only in so far as they refer beyond themselves to an infinite. Thus both appetite and reason point the direction of experience toward the quest of infinite value, but at the same time limit that quest to finite things, of which the highest reaches are the good, the true, the beautiful, and the worshipful.

The direction of this quest and its bafflements are exhibited in the compromise which is art—the uncertain and tentative balance between discreteness and significance—endowing the discrete with the greatest possible value that it can, given the material. Art is the mysterious active process of all doing and making, immediately and directly gathering together into new syntheses old syntheses which by themselves are but random and brute material. Thus into every new synthesis something is introduced which was not in the original syntheses, but which renders them related and meaningful. The first phase of art we described as induction. The second phase we described as giving induction historicity, that is, the incorporation of it into what has already been accepted as true and actual, making it fit into what is completely social. This attempt to fit a new synthesis into what is accepted is at bottom the same process, whether it is regarded as the proof by deductive reasoning, by empiricism, or, in the case of the fine arts, by adequate

appreciation of their present beauty. The new synthesis, the work of art, is first appreciated as beautiful, but later can be assimilated as good, at which time it loses its beauty. Should the beautiful not be reduced to the good, it becomes the worshipful, thereby setting up an irrational idolatry which inevitably carries with it a slavery. Nearly all the evil in the world is traceable to this kind of idolatry: dogma held sacrosanct for its own sake, the justice which becomes an end in itself and apart from human good, the Molochs who are served with blood sacrifices. At present the world is suffering from the incomplete reduction of the beautiful to the good, with science and technology made, *pro tem.* at least, the worshipful. We are in the midst of a slavery to science and technology, a slavery on a gigantic scale past anything remembered, with splendour and sacrifice unexcelled. This is the kind of idolatry which the Second Commandment warns against in prophetic terms, the holding as worshipful aught but infinite value—the jealous God who visiteth the iniquities of the fathers upon their children even unto the third and fourth generation. The logic of the beautiful is inexorable.

For science itself and technology should be human goods. They represent the great creative achievement of the modern world, the adventure never before attempted: the making of the old brute material of the tangible into a vast new synthesis. It may be that the modern mind is as yet too overwhelmed by the beauty of these creations to turn them to human good; or they may become a more exacting and horrible idolatry than has ever been known.

Science is rightly unconcerned, as is all art in the making, with these problems, and goes on to work out of an old and lost symbolism its new and vital synthesis. For the world of tangible relations is a symbolism which goes back past where recorded time has any meaning. This world thus seems to be an almost meaningless affair, independent of its creator, man, and indifferent to him; yet it somehow hangs together. To this symbolism the key has been lost, but its connected-

ness, its logic, is being painstakingly worked out like a puzzle.

- For this reason the scientists are perhaps right in using the mechanistic approach, insisting upon the sole method of efficient causation; for one can hardly solve a cryptogram by guessing continually at the key, but must, rather, painstakingly piece together a little here and there. Yet if there were no master key, no rhyme or reason, this linking together of details would be an impossible task. Therefore science, sublime in its accomplishments, is myopic whenever it ventures to make philosophical judgments. It does not see that what it calls physical laws are the logic of the symbolism of the tangible. The whole world of experience is ruled by the logic of symbolism—the symbolism of the tangible and all other symbolisms. By *logic* we mean something very simple: the law of limitations. Granted one limitation, some things inexorably follow and some do not; but this is the law of experience. The infinite can know nothing of limitation or its laws.

In spite of the evidence that the direction of human endeavour is toward higher values and greater and greater integration, we find no warrant to believe that humanity *must* continue in this direction. That it *will* continue in this direction depends upon its courage to destroy its self-made limitations in favour of ever greater conceptions, though these too prove to be themselves limitations. Should humanity be afraid so to do, it must decline to satisfaction with a lower level of value than that which it now maintains. If this be unthinkable, it is well to remember that concepts held final are the death of reason; and should the whole race of man accept as final finite things, reason would descend to a mere cunning in the preservation of the discrete self. Humanity's great chance lies in the possibility of reason asserting its highest rôle as the servant of infinite value. There is no choice but to affirm the essential rightness of rational man and his destiny. The destiny of man, the quest of the infinite, is the search for what is eternal; it is the conquest of time, the attempt to stop the flux, and, by integrating all, to remove the necessity for time

which is the substitute concept for that integration. It is to select the highest value which, by our definition, would stop the "flow" of time, for there would then be no higher value to select. It is to make all possibilities actual, which by our definition is the future fulfilled and made present. It is to dissipate the distortion of the present, thus making needless the category of the past; and by removing time-partitions to make all one, for ever. This means, of course, the extinction of all individual being, all personality, so that mankind becomes the hero of the tragedy, sacrificing the self for a cause which he only glimpses, but feels as his most imperative need. It is no wonder that the hero is admired, for his is the deepest affirmation of which man is capable. This is exactly what the great legends reveal; the great legends, whether of myth or history, whether of Prometheus, Christ, or of Socrates or Napoleon, speak in the truest terms.

Life itself is a legend, whether we look to the story of Genesis, the adventure which begins with the partaking of the bitter fruit of the Tree of the Knowledge of Good and Evil; or whether we look to the legend of Evolution which presents man rising from the primeval ooze, and gradually standing erect, with his feet on the earth but his head toward the sky. Perhaps it is not too wild a surmise that through the legend of technology and out of the idolatry of the machine man may yet after fearful anguish lift himself finally above the bondage to the tangible, the tyranny of clock time.

What can we reasonably conclude as to the possibilities for happiness of man in his world? Certainly from one point of view living seems an exceedingly dubious business and consigned to certain failure. Man's impossible attempt to aspire beyond himself is both pathetic and ludicrous; and to keep on pursuing an impossible goal with the knowledge that it can never be attained, seems foolish and absurd. But, to make matters worse, all attainable goals prove to be empty when attained; yet not to struggle toward some goal is to court nihilism and the loosing of that tension in which life consists.

At best we are called on to part company with contentments that are part of our lives and for which we are sick with nostalgia. And for what do we abandon our little contentments? For impossible ideals, for impersonal causes, for unrecognized loyalties. Yet happiness lies in the pursuit of these shadows which, were they capable of being grasped, would at once fade. The good is only good as long as it is desired; when secured, it is no longer good; the beautiful, which demands human blood, yields in return little permanence and no gratitude; the worshipful mocks us at every step, that which we endow with infinite value, by the slightest change becomes the lowest and effects the greatest harm. Human goods conflict: what is good for one man may be evil for thousands of others. No rational belief is anything but a fiction, so that ultimately we are traduced; if we accept one as final, it fails us, yet to distrust all will lead nowhere. "Jupiter died from being recognized as fiction because his priests had presented him as absolute."¹⁷ Yet as an avowed fiction Jupiter would have interested no one. Finally, the ancient adversary always conquers: the sea of time overwhelms the individual, perhaps the race, too, and even the physical universe.

How, then, amid a world so circumstanced is it possible to come to terms with life? If we are but "such stuff as dreams are made on," if "the great globe itself . . . all which it inherit, shall dissolve and . . . leave not a rack behind," then why indeed is not the Eastern mystic right: is not life all illusion, *maya*, is it not true that the less we struggle with it the better; is not passivity or death the only choice open?

But Western man has not followed the way of passivity. He has chosen the harder path—through the world of common experience. He has accepted the arduous gage, finding his justification in carrying on a hopeless struggle in which hope yet persists. Western man has chosen to be hero rather than saint. To him, as to Samuel Butler, the question of whether

¹⁷ André Maurois, "The Myth of Myth," *Virginia Quarterly Review*, January, 1932.

life is worth living is "a question for an embryo, not for a man."

It is not possible for man to judge life good or evil; when he does so he deceives himself, for there is nothing with which to compare existence. All denials of the goodness of life are denials of the goodness of a certain kind of life, and, therefore, affirmations of a better life. It is possible and necessary, then, to judge between individual ways of living and to select the better. Of mere living, no man was ever proud; but the good life has always been his aim, and he has ever been willing to throw away mere existence for it. To desire among goods the greatest good, which is the most desirable, thus to be truest to the self; to prefer among beautiful things the grander beauty, thus to weigh objective things most truly; to worship that only which reflects infinite value, thus to seek the truth; and by all this to increase the self with whatever it can be brought to include, and to spread the self as far beyond itself as possible—this is the good life, ordered according to the hierarchy of values.

If the progress of mankind means anything, it must mean living constantly nearer this hierarchy, with the human spirit allowed to adventure toward higher and more inclusive legends; it cannot be known how far mankind may attain to what is now impossible. The way must be cleared; no limit must be set, though it seems there must always be a limit. Such progress as we mean can hardly be measured within the cycle of history. But the speculative reason and the fine arts and laughter are milestones on the way that distinguishes man from other animals. It is of the utmost necessity that the basic rôle of art be given its due place of importance. Man must be allowed to fashion, refashion, and fashion again, always nearer to the heart's desire. To-day the artist is considered merely the useless maker of beautiful things, a consideration from which the whole race is the sufferer; whereas the artist is truly both seer and precursor. His part is no soft and decorative one; the making and the assimilation of works.

of art require the most drastic severity of intellect and also the conjuring of the deepest and darkest impulses. Toward the creation of art and its understanding both serene Reason and the chthonic deities must be invoked.

If mankind is on the way to a wider vision, then known and attainable things are just what they ought to be—unsatisfying; and the fact that happiness does not reside in them is no denial of happiness, but a denial of the value of present attainments. Similarly, that good things perish is no denial of their goodness; that no beauty is ever perfect is no denial of the beauty that is glimpsed in imperfection. Thus the non-fulfilment of hope does not annihilate hope, but, on the contrary, keeps it alive.

Granting that we may be dreams from the vantage point of some other kind of being, what would it mean to a man who keeps on dreaming to know that he is dreaming? Thus we proclaim that all things are real, because they exist for man. There is always the affirmative, the non-fictional aspect which shines through all things, limited as they are known. Otherwise they could not be. That we can never find this principle in its purity, and go seeking it for ever amidst the signatures and shapes of all things, is a certain proof to us that it is the most empirical fact in the universe. This is the promise of the future. It is this meaning that we can know only by not knowing, sense by not sensing, name by not naming, that all things point to, and all men gesticulate toward, and which, for want of a better name, they call God.

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